Gas Journal

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Editorial Notes

Freedom of Choice

At the time of going to press with the "JOURNAL" last week we were able to record the judgment of Mr. Justice Farwell in the action in which the Egham and Staines Electricity Company claimed an injunction to restrain the Gas Light and Coke Company from procuring or inciting any persons who had entered into agreement with the Electricity Company for the hire of electric cookers to permit the affixing to those cookers of gas hotplates. An injunction was also asked to restrain the Gas Light and Coke Company from affixing gas hotplates or similar apparatus to any electric cooker hired by the plaintiffs to their consumers. The judgment, which was given against the Electricity Company, is of the greatest interest and importance to the Gas Industry as a whole, and on another page we report the salient passages of it.

It is the custom of the Electricity Company, in supplying cookers to certain classes of consumer, to require those consumers to enter into agreements under which they covenant not to make alterations or additions to these cookers. Consumers, having experienced the drawbacks of cooking by electricity, have very properly turned to gas to help them out of their difficulties, and the Gas Light and Coke Company have, also very properly, supplied them with gas hotplates which can, if it is so desired, be placed on the top of the electric cooker—in effect, making the electric cooker serve as a mere table. This practice has doubtless arisen owing to the fact that the tenants, stimulated by electrical propaganda, have ordered electric cookers and have entered into agreements regarding the hire of those cookers without due consideration of the terms which those agreements may contain. When, as is so often the case, experience of the electric cooker fosters a desire for gas, the consumer finds that he has agreed not to move the cooker, which takes up so large an amount of space in the small kitchen that there is no room to introduce a gas cooker proper. Hence the demand for the gas hotplate.

We should have thought that the Electricity Company would have been chary to give publicity to this practice which cannot be regarded as a particularly good advertisement of the much boosted popularity of electricity among the working classes. However, a year ago, the Company brought the matter before the High Court. At that time Mr. Justice Bucknill refused to grant the injunction, though he stated that the application could be renewed. The Company did renew their application, and they cannot feel too pleased with the result of their action.

The judgment of Mr. Justice Farwell is, as we have said, of great importance to the Gas Industry as a whole. In regard to the gas hotplate in question, he said, it is quite plain that it can be used anywhere, and not only on the top of the electric cooker. To suggest that the hotplate is an alteration or addition to the electric cooker seemed to him to "border on the ridiculous"—as ridiculous, in fact, as suggesting that, if a person had a lamp heated by methylated spirit and used it for boiling water, it would be an addition or alteration to the cooker if it was placed on the top of the cooker. The hotplate, he continued, affords no sort of obstacle or difficulty to the plaintiffs in any Statutory duty they have to perform in connection with their electric cooker.

Some suggestion was made by the Electricity Company that the placing of a gas fitting on an electric cooker was dangerous. In regard to this, Mr. Justice Farwell remarked that the proof of the pudding must be in the eating. Actually there were only two cases—and not in the Company's district—in which it was possible apparently for the plaintiffs to say that any real cause for anxiety had been given. One was a case where the flexible tube of the hotplate happened to come up against an electric cooker which was not working properly, and there were sparks. The other was a case in which it was said that the presence of a gas pipe on the cooker misled the person who went to test the electric cooker. "I think the obvious retort to that," observed his Lordship, "is that the person who went down to inspect the electric cooker could not have been an expert person, because anyone who knew anything about the matter would have realized that the rigid iron rod might possibly have some effect." Moreover, if a hirer insists upon doing something to an electric cooker which does in fact render it likely to be dangerous, the Electricity Company has an obvious remedy. Their remedy is to say to the hirer, either remove what we object to or we shall remove the electric cooker. For our part, we cannot see the Egham and Staines Electricity Company taking kindly to this remedy.

It is, however, to the broad issue of the judgment that

we would call particular attention—the right of the consumer to a free choice as to what source of energy, gas or electricity, he shall use. If, said Mr. Justice Farwell, he were to hold that the hirer of an electric cooker could not place a gas hotplate on top, he would be doing something which would be preventing the consumer from exercising that free choice that he or she has of using either gas or electricity, or both. This point is of such importance that we quote the following from Mr. Justice Farwell's judgment: " These two Companies, the plaintiffs and the defendants, are both Statutory bodies. They both have privileges and correlative obligations. . . . Their obligations are to supply to those persons who desire it and will pay for it the power which they produce, and both are entitled, within proper limits, to make the best of their particular products and to endeavour to promote the sale of their own products even at the expense of their rival; but in my judgment the public have an undoubted right to determine for themselves whether they will use electricity or whether they will use gas or whether they will use both. That is a right of the public which has been recognized by Parliament. In those circumstances, in my judgment, any method adopted by either one of these two Statutory bodies which is purely for the purpose of promoting their own commercial interest but which does in fact deprive the public of that right which they have to make their own choice as to what they will use is a method which this Court would be very slow to enforce or to countenance."

The action brought by the Egham and Staines Electricity Company has once more made it clear that the tenant must be assured of freedom of choice in the use of gas and electricity, and the result of the hearing does not constitute good propaganda for electric cooking. Witnesses whom Mr. Justice Farwell described in his judgment as " excellent people " spoke of the slowness of carrying out heating operations on the electric hotplate and compared it with the speed and general efficiency of gas. Tenants in the area of the Company are assured now that there is nothing to prevent them from placing gas hotplates on electric cookers the hire agreement for which they may have signed without thought of possible consequences and without experience of the disadvantages of electric cooking. The thanks of the Gas Industry are due to the Staines and Egham Electricity Company for bringing this action and thereby making this point quite clear.

L.C.C. and Gas Prices

It will be recalled that in their Report the Joint Committee on Gas Prices recommended that an aggregate increase in price by 12% in any period of three years should be allowed without approval of the Board of Trade, but that any undertaking wishing to increase the ordinary price beyond this amount would be required to obtain the sanction of the Board. We have called attention in these columns to the fact that a percentage increase upon the flat rate previously in force is not a satisfactory method of measuring an increase in charge for which official sanction would have to be obtained. In the case of a company charging a very low price, a 12% increase would mean very little. On the other hand, to a company charging a high price 12% would represent a large amount of money. As the object is to meet such matters, for example, as an increase in the price of coal, it should be the same for a low priced as for a high priced undertaking.

At the last meeting of the London County Council a report of the Public Control Committee on the findings of the Joint Committee on Gas Prices was received and the recommendations contained in the report were adopted without debate. One of the recommendations is concerned with this question of increase in price, and the Public Control Committee state that there is no provision whereby a reduction in the published price could be enforced if manufacturing costs fall, and express the opinion that opportunity should be given to local authorities from time to time to object to the published price then current. Such a recommendation, which it was agreed should be forwarded to the Board of Trade, is wholly inimical to the interests of the Gas Industry and would be unworkable. It would be quite impossible to carry on the Industry if there were such a control of prices, knowing that local authorities, especially those owning electricity works, are inclined to do everything to put obstacles in the way of gas development. One has only to consider the position of the Gas Light and Coke Company, in whose area—as was mentioned during the course of the Gas Prices Enquiry—there are a matter of seventy local authorities, to realize how impossible the situation would be.

The other recommendation of the Joint Committee on Gas Prices to which the London County Council object is the authorization to impose minimum quarterly charges calculated on the basis of an assumed consumption of 10 therms per quarter. Surely this question has been thoroughly well considered from every angle. In the 1933 Report of the Gas Legislation Committee the same recommendation was made in this respect as in the Report of the Joint Committee. The whole matter has been threshed out. The Joint Committee, after the long and exhaustive enquiry, gave strong expression to the fact that the Gas Industry, in the midst of competition of growing intensity, must have full freedom to operate and must from the legislative point of view be given the same chance as electricity. It is most unfortunate that the London County Council should seek to oppose the recommendations of the Joint Committee in these two important respects.

A Coke Export Association

For long we have emphasized the great need for the Gas Industry as a whole to place its marketing of coke on a properly organized basis, and it is with gratification that we have been able to record the progress in co-ordinated action in the London and Counties area, in the North-East Coast District, and, more recently, in the Midlands. To meet the demand for coke for blast furnaces, coke ovens of huge capacity are being erected apace. The latest plant to be described in the " Journal " is that at the Cleveland Works of Dorman Long & Co., Ltd., an account of which was given in our issue of July 7. That plant has a capacity of a million tons of coal a year. It is producing not only coke for blast furnaces, but is also coping with a growing demand for domestic coke. The present demand for steel is so great that the supply of furnace coke is inadequate, and doubtless other enormous installations of coke ovens will be brought into operation. When the demand for steel slackens, and this is to be expected sooner or later, coke of a different type from furnace coke can readily be manufactured at the ovens, and the domestic market will once again be flooded. Only by co-operation between all coke producing interests can the domestic coke market be stabilized. That is why we urge 100% membership of

the various regional associations—which as yet is not by any means an accomplished fact.

A further step—and a step greatly to be welcomed—in this work of co-ordination is the formation of a Gas Coke Export Association, the establishment of which received the blessing of the Central Executive Board of the National Gas Council at the monthly meeting reported in our columns last week. Let us hope that all undertakings interested in the export of coke will rally together in this Association for the common good, which has obvious potentialities for fostering that "co-operation between all coke producing interests," by which we set such great store.

"Field's Analysis"

A REVIEW of "Field's Analysis" for the Year 1936—the 68th publication of the work—appears on a later page of the "JOURNAL" to-day. In the review attention is drawn to several points which we think will be of interest to our readers. In the Analysis itself, and the tables set out, there is a fund of information available to all interested in the development of the Gas Industry.

There is one point in connection with the published accounts of the gas undertakings which does appear to warrant particular attention. There is no standard form of accounts applicable to gas undertakings, and we suggest it would be not only of interest, but of utility to the Industry, if some such standard could be generally approved and adopted. If it could be accompanied by a universal standard for classification of the items in the accounts, a very useful purpose would be served.

We compliment the joint compilers, Messrs. S. H. Collins and P. F. Scarth, the Joint Accountants of the Gas Light and Coke Company, on the production of the 68th issue of this exceedingly useful work.

Organic Sulphur Removal

AN assumption fairly generally held is that, in order to ensure a low sulphur content in gas by the oil washing process, it is necessary to extract all the benzole. Reference to this erroneous assumption was made at the Annual Meeting of The Institution of Gas Engineers, and the point is emphasized in an article on later pages of our issue to-day. As a general rule, it is possible to reduce the sulphur content of gas down to 5 grains per 100 cu.ft. with a variable extraction of benzole of from 1 to 3 gallons per ton. The article in question shows how simple is the operation of the process and how applicable it is to any size of works. Actual results are given of the working of three oil washing plants for combined benzole and sulphur extraction. One of these plants, in which distillation of the wash oil is carried out under partial vacuum, is at the Kensal Green Station of the Gas Light and Coke Company, and is treating 7 million cu.ft. of gas a day for full benzole recovery; another is at the works of the Huddersfield Gas Department, operating on 50% benzole recovery; the other is at Mirfield, working for a 35% to 40% benzole recovery. In all cases the sulphur content of the treated gas is below 10 grains per 100 cu.ft. The article demonstrates well enough the flexibility of the process.

With such plant available, and with such favourable market conditions for coke and benzole, it is, to say the least, surprising that throughout the country only about 10% of the gas supplied is treated for organic sulphur removal—outside London only some 7,000 million cu.ft., yet the yearly make of the Gas Industry is in the neighbourhood of 320,000 million cu.ft. The position is all the more surprising in view of the extension of load which would follow the supply of a gas of very low sulphur content and of the economies which could be made in the maintenance cost of appliances. The article to which we refer indicates what can be done in the supply of gas low in sulphur by washing with oil. This particular method is, of course, not the only means for extracting organic sulphur from gas. It is desirable that alternative catalytic processes should be closely investigated, and we know that research at present in progress on such processes appears to hold out much promise; meanwhile the method which forms the subject of the article on later pages is a proved practical and economic proposition—and a gas free from, or practically free from, sulphur would be of enormous benefit to our Industry.

In This Week's "JOURNAL"

The Savoy Cooking Range.

Mr. George Reeves-Smith, Managing Director of the Savoy, Berkeley, and Claridge's Hotels, knows as much about hotels and restaurants as anyone else in the world. Last week he gave as his opinion that the type of stove recently installed in the Savoy grillroom kitchen will gradually replace the old solid fuel ranges. He said this at a luncheon party given by Mr. Stanley Benham to inaugurate the installation carried out by the firm of which he is Chairman and Managing Director. Specialist study and design is the keystone of their policy.

See p. 232.

Removal of Organic Sulphur.

This is a subject which is at present engaging a great deal of attention in the Gas Industry, both from those directly concerned with the engineering side and from those responsible for sales and distribution. An article relates briefly what progress has been made in the development of a process designed specifically for the removal of organic sulphur compounds, combining also the recovery of benzole and the removal of naphthalene. Explanation is given of the operation of the process in the case of a works desiring to remove naphthalene and organic sulphur compounds, but for which it would be permissible to recover only a small quantity of benzole on account of having a high declared calorific value or carbonizing plant which could not be used to make high calorific value gas with economy. It is emphasized that when reducing the sulphur compounds content to below 10 grains per 100 cu.ft. the quantity of benzole can be adjusted at will. Results are set out of the working of three plants, a large unit in London and two smaller plants in the Provinces. In each case the sulphur content in the gas at the outlet of the plants is below 10 grains per 100 cu.ft. An outline is also given of a method of determining the organic sulphur content of gas which is quick and can be reproduced with consistent accuracy for the purpose of routine control tests.

See p. 233.

Thorough Reconstruction.

With the inauguration last Friday of the new plant at the Ilkeston Corporation Gas-Works, which includes an installation of upwardly-heated Woodall-Duckham vertical retorts, there was inspected a most thorough scheme of reconstruction and reorganization involving not only the manufacturing, but the executive, side of the undertaking.

See p. 237.

"Field's Analysis."

A review is published of "Field's Analysis" for the year 1936, compiled by Messrs. S. H. Collins and P. F. Scarth, Joint Accountants of the Gas Light and Coke Company. It is the 68th of the series. In the Analysis itself and the tables set out, there is a fund of information available to all interested in the development of the Gas Industry. There has been a satisfactory increase in sales, equal to 5½% in the case of the Company-owned Undertakings and 4½% in the Undertakings controlled by Local Authorities. The total sales of gas per consumer has also increased. The sales of gas per public lamp closely approximates to the sales of gas per prepayment consumer, indicating the desirability of retaining the public lighting load, for the loss of a public lamp would be equivalent to the loss of a prepayment consumer.

See p. 240.

Tenders—Budapest.

Heavy plant manufacturers in this country will be interested in an invitation to tender for modifying the coke quenching plant and constructing handling, grading, &c., plant at the Municipal Gas-Works of Budapest. There are currency and other restrictions in plenty, but the close-set announcement (not at our own dictation) will be carefully studied.

See p. 250.

PERSONAL

Institution Assistant Secretary

Studio, Briggs Limited.

The Council of The Institution of Gas Engineers has appointed Mr. W. E. LE B. DIAMOND, Ph.D. (Cantab.), A.I.C., to the position of Assistant Secretary to the Institution.

Dr. Diamond, who is 38 years of age, was educated at Christ's Hospital, Horsham, and Clare College, Cambridge. He was awarded the degree of Ph.D. for research in Agriculture.

Having held teaching and research posts at Cambridge and Government appointments in Nigeria and Ceylon, Dr. Diamond has been, since 1931, on the staff of the Royal Society, where he has been in charge of all the publications of the Society.

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Mr. C. G. LANGFORD has been elected a Director of George Glover & Co., Ltd., Meter Manufacturers, Chelsea. Mr. Langford is General Manager of the Company.

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Mr. A. R. JUBB, Engineer and General Manager of the Melton Mowbray Gas Light and Coke Company, has now received the additional appointment of Engineer and Secretary of the Uppingham Gas Light and Coke Company. Both the undertakings are controlled by Gas Consolidation, Ltd.

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Following the retirement of Mr. T. E. FRANKLIN, Mr. R. L. ASPINALL has been appointed Gas and Water Engineer and Manager of the Barry Gas, Water, and Electricity Works.

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Mr. G. J. RIMMER, Technical Assistant to the Hinckley Gas Department, has been appointed to the position of Assistant Engineer and Manager, vacant by the resignation of Mr. W. J. Shelley, who becomes Manager at Thornton Cleveleys. Mr. Rimmer received his training with the Wallasey Gas and Water Department. At Wallasey he was appointed to the position of Technical and Engineering Assistant in 1930.

* * *

A pleasant function took place on Monday last when upwards of 40 guests assembled at the Tudor Café, Marychurch, to celebrate the Golden Wedding of Mr. and Mrs. WALTER HOLE. Prior to his retirement in 1922, Mr. Hole was Superintendent of the Distribution Department of the City of Leeds Gas Department, a position he held for 24 years. He was one of the pioneers of the distribution of gas at high pressures. Author of "The Distribution of Gas," for 25 years a standard text-book on the subject, Mr. Hole has always been keenly interested in the technical education of the young engineer, and for 10 years was the Examiner in Gas Distribution for the City and Guilds of London Institute. With Sir Francis Goodenough he took an important part in establishing the Gas Education Scheme of The Institution of Gas Engineers. For 10 years after his retirement he acted as Organizing Secretary for the Scheme.

OBITUARY

Harold Newsom Davis

We were able last week only briefly to announce the death of Mr. Harold Newsom Davis, Managing Director of The Davis Gas Stove Company, Ltd., Luton. Mr. Davis, who had been ill for about a week, died at his home, Bamville Wood, Harpenden, on July 18, at the age of 64. Only 24 hours before his death he had been elected a vice-president of Harpenden Golf Club.

The Davis Gas Stove Company was founded by Mr. Davis' father. In 1895 Mr. Davis became associated with the Langley Foundry Company, Ltd., which was formed in Langley Street, Luton, to make castings for the Davis Company. In 1900 the latter took over the Langley Foundry, and Mr. Davis became Managing Director. His father, Mr. Henry Davis, and two of his uncles were also on the directorate. In the same year it was found that accommodation at Langley Street was insufficient for the growing business, and the Directors decided to start a foundry in Scotland. The Diamond Foundry Company, Ltd., was opened at Falkirk, and Mr. Davis was appointed Managing Director of the new concern, retaining also his Directorship of the Langley Foundry Company.

In a few years it was again apparent that expansion was needed, and a completely new foundry was built at Luton. Here the Diamond Foundry began production in 1907, with Mr. Davis as Managing Director, and the other foundries were closed down. Mr. Davis retained that position until his death, jointly with Mr. Cyril G. Davis. He saw the foundry grow from a concern employing a bare hundred to its present dimensions, with over 2,000 employees. He was also for many years Governing Director of H. and C. Davis & Co., Ltd., constructional engineers. He became a Managing Director of Radiation Ltd., when the Company was formed.

"He made the Davis Company by his tremendous energy, foresight, and a personality that got the best out of everybody," said an official of the firm. Indefatigable personal effort and complete harmony with his workpeople were, indeed, the traits that made Mr. Davis so successful. Mr. Davis introduced many new ideas into the light casting industry. He was practically the first man to sponsor the continuous casting plant. The many other technical improvements with which he was connected were of great importance in the development of the gas cooker. For the past seven years his son, Mr. Kenneth Davis, has been closely associated with him as a Director.

Perhaps the chief interest of Mr. Davis, outside business activities, was the Wheathampstead Parish Church, with which he had been connected about 15 years. He was a churchwarden for many years, but resigned that position 18 months ago. He had also been Vice-Chairman of the Parochial Church Council for some years until last Easter. Only a fortnight ago he attended the church fête. He was largely instrumental in founding the St. Helen's Senior Day School, which was built about eight years ago. Mr. Davis also took a very keen interest in the Boy Scout movement, and particularly the St. Mary's (Hendon) Troop, who on many occasions were invited to his home, and for the last 10 years had camped annually in the grounds of Bamville Wood. He was chairman of the Harpenden Boy Scouts Association.

A memorial service took place at Wheathampstead Parish Church at noon on July 21. It was attended by a great number of employees, and the whole of the works at Dallow Road were closed from noon till 2 p.m. Mr. Davis leaves a widow, a daughter, and four sons. All the sons have taken their degree at Cambridge.

News in Brief

CURRENT EVENTS IN THE GAS INDUSTRY

The Tender of the Haydon Bridge Gas Light Company to light 31 lamps and the church clock in Haydon Bridge has been accepted by the Parish Council.

A **Reduction** in the price of gas to ordinary meter users from 4s. 6d. to 4s. 2d. per 1,000 cu.ft. and to automatic meter users from 5s. to 4s. 8d. per 1,000 cu.ft. is announced by the Lanark County Council.

Over Fifty Decorated Vehicles took part in the annual carnival at Penryn, Cornwall, on July 17, when second prize in the class for the best mechanically-propelled exhibit was awarded to Penryn Gas Company.

The New Showrooms of the Blyth Gas Company were opened last week. The premises are in Bridge Street, and the ceremony was performed by the Mayoress (Mrs. J. Reilly). Mr. G. Dobson, Chairman of the Directors, presided.

Among the Objects of a Special Order for which the Dartmouth Gas, Coke, and Coal Company intend to apply to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934, is to authorize the Company to supply gas within certain areas and to acquire lands for gas-works purposes.

Application for a Special Order under the Gas Undertakings Acts, 1920 to 1934, is intended to be made to the Board of Trade by the Haslingden Union Gas Company with the object *inter alia* of empowering the Company to raise additional money by borrowing on mortgage and by the issue of debenture stock. Another purpose of the Order is to authorize the Company to take a bulk supply of coke oven gas.

The Price of Gas has been increased by the Selkirk Gas Company by 5d. per 1,000 cu.ft., making the price 3s. 9d. for ordinary meter users and 3s. 11½d. for slot meter users. This is due to an increase of 4s. per ton in coal. Gas prices are also to be increased by Paisley Town Council by 0·22d. per therm, or 1d. per 1,000 cu.ft. Another increase is announced at Inverness, where the Gas Committee has decided to raise the price by 2d. per 1,000 cu.ft. as from September.

Work Was Begun Last Week at the coal-oil works, Seaham Harbour, which have been taken over by the newly formed company, Modern Fuels, Ltd., from Coal and Allied Industries, Ltd., and which have been idle since the end of 1936. The works will shortly employ 200 men and will produce from non-coking coal and poor grade fuels a smokeless fuel, claimed to be cheaper than coal. The company has a nominal capital of £70,000 in £1 shares, and has the backing of the Nuffield Trust.

The Annual Report for 1936 of the Société du Gaz de Paris shows that the output of gas during the twelve months reached a total of 17,249 million cu.ft. The number of consumers again shows an increase from 1,018,022 to 1,024,676. The mains department laid about 43 miles of new mains, the bulk of which, however, was renewal work, the actual extension of the system, which now totals 1,657 miles, being 5½ miles. The present concession comes to an end on Aug. 31, when the work will be taken over, under a new convention with the Paris Municipality running until 1965, by a recently organized concern known as the Société d'Études et Participations Gazières, in which four different companies are financially interested, among them being the former Paris Gas Company.

The "News Chronicle" Schools Exhibition, the idea for which arose out of that paper's school designing competition, will be held in London from Dec. 20, 1937, to Jan. 12, 1938. It will occupy all three floors of Dorland Hall, Regent Street, that finely equipped exhibition centre. Concurrently there will be a small introductory exhibit in the hall of the Charing Cross Underground Station. Every facet of school life and interest for which room can be found will be included; it will, it is claimed, be the first comprehensive exhibition staged in Great Britain for parents, children, teacher, and educational authority. It seems that here is an excellent opportunity for the display of gas equipment for the laboratory, domestic science centre, heating, lighting, and cooking. Space enquiries are invited.

New Showrooms are being considered by a sub-committee of the Falkirk Town Council. The Engineer and Manager, Mr. H. G. Ritchie, suggested that the site belonging to the Town Council at the corner of Buchanan Court and High Street might be used by the Gas Department for new premises. The Council have approved a recommendation that a new breeze bunker of 15 tons capacity with an outlet chute and static screen for taking out the smalls together with steam-air injector, one door per producer with the necessary instruments, be purchased.

Low Rates for Industrial Gas are to be recommended by the Darlington Gas and Electricity Committee to the Town Council. The recommendation states that following on the drastic reduction in the price of gas, as a result of the purchase of coke oven gas, which was applied to the domestic consumer during the past 15 months, the price of gas for industrial purposes should be brought into line by an extension of the new block rate so that large consumptions over 50,000 cu.ft. and under 1,000,000 cu.ft. per quarter be charged 3½d. per therm, and over 1,000,000 cu.ft. at 3d. per therm.

Amalgamation and Grouping

United Kingdom—Additional Acquisitions.

Close Brothers, Ltd., Secretaries of the United Kingdom Gas Corporation, announce that the Corporation has just completed the purchase of over 90% of the ordinary share capital of the Aberdare and Aberaman Consumers' Gas Company, which adjoins the group of gas undertakings in South Wales already owned by the Corporation. Over 50% of the purchase price of £38,243 for the shares of the Aberdare and Aberaman Company was satisfied by the allotment of ordinary shares of the Corporation.

The Corporation will be completing during this week the purchase of over 90% of the 5% Consolidated ordinary stock of the Leighton Buzzard Gas Company, which adjoins the Corporation's Undertaking at Aylesbury, at a cost of £61,210. Over two-thirds of this purchase consideration will be satisfied by the allotment of ordinary shares of the Corporation.

A further recent acquisition made by the Corporation was the purchase of over 93% of the ordinary shares of the Hornsea Gas Light and Coke Company, at a cost of £22,766. This Company is immediately adjacent to the Corporation's Undertaking at Bridlington.

Forthcoming Engagements

July.

29.—GAS COMPANIES' PROTECTION ASSOCIATION.—Committee Meeting, 2.30 p.m.

Aug.

10.—IRISH ASSOCIATION.—Annual Meeting at Belfast.

Sept.

6.—LONDON AND COUNTIES COKE ASSOCIATION.—Technical Committee, 2.30 p.m.

6-9.—A.P.L.E.—14th Annual Meeting and Conference at Folkestone.

9-10.—NORTH BRITISH ASSOCIATION.—Annual Meeting at Edinburgh.

14.—N.G.C.—Central Executive Board Meeting, 2.30 p.m.

15.—I.G.E.—Finance Committee, 10 a.m.; Membership Committee, 11 a.m.; Research Executive Committee, 2.30 p.m.

16.—WALES AND MONMOUTHSHIRE ASSOCIATION.—General Meeting at Porthcawl.

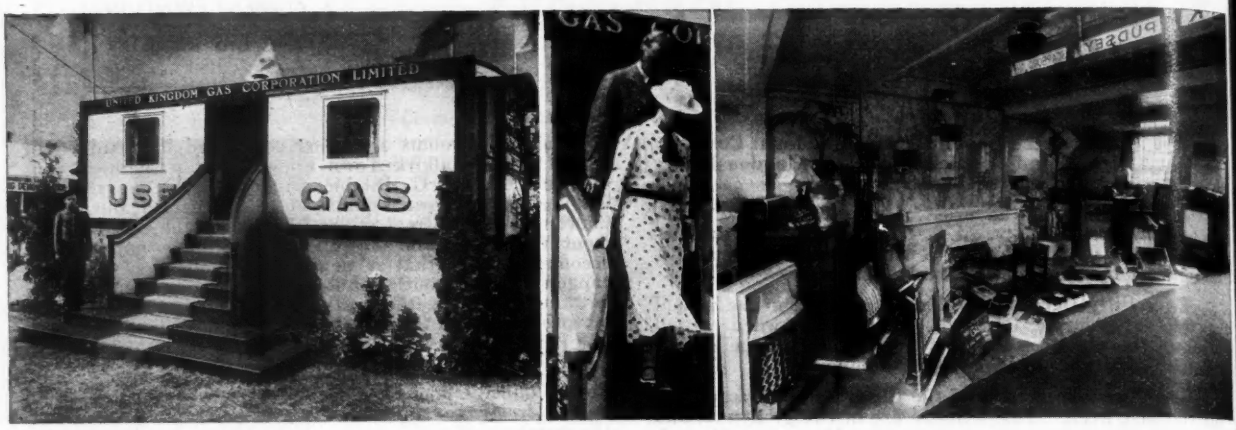
16.—I.G.E.—Gas Education Executive Committee, 11 a.m.; Refractory Materials Joint Committee, 2.30 p.m.

17.—I.G.E.—Joint Lighting Committee, 2.30 p.m.

20.—LONDON AND COUNTIES COKE ASSOCIATION.—Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m.

23.—S.B.G.I.—Council Meeting, 11 a.m.

Princess Royal Inspects Gas Exhibit at Yorkshire Show



Gas had a splendid showing at the recent Yorkshire Agricultural Show, and the travelling showroom of the York Gas Company was honoured by a gracious visit from the Princess Royal, who is seen (*centre*) with Mr. H. E. Bloor, Director and Secretary of the York Gas Company. Her Royal Highness was keenly interested in the various applications of gas. The success which attended the gas exhibit must have been particularly gratifying to Mr. Bloor, who was Chairman of the Special Publicity Committee for the Show. Over 70,000 attended, and the United Kingdom Gas Corporation, Ltd., of which York is a constituent company, sold advance tickets, the purchasers of which received an invitation to tea. Over 700 were thus entertained on the second day, and the impression gained was that it was very valuable and economical publicity. Exterior and interior views of the showroom are seen left and right.

A Co-operative Effort

South Metropolitan Enterprise

The prizes in connection with the recent Camberwell and Peckham "Baby Competition Week" were presented by Mrs. Lewis Silkin, wife of the Member of Parliament for Peckham, in the gas exhibition hall of Messrs. H. Holdron, Ltd., Peckham.

Mr. and Mrs. Lewis Silkin were supported by officers of Messrs. Holdron, Ltd., United Dairies, Ltd., and the South Metropolitan Gas Company, these Companies being responsible for the organization of the competition.

Janet Witton, of New Cross, S.E., was winner of the cup for the bonniest baby of the week. The cake and recipe competitions were well supported. It was a condition of this competition that milk should be one of the principal ingredients. A vote of thanks to Mr. and Mrs. Silkin was moved by Mrs. F. J. Bywater and seconded by Mr. Martin (United Dairies, Ltd.), and was suitably acknowledged.

New Gas Loads in South London

Gas as an Army Fuel Ration

The July issue of the *Co-partnership Journal* of the South Metropolitan Gas Company contains several interesting items concerning new business which the Company has gained. In a new estate, known as Corner Fielde, in Streatham, the Company is supplying and fixing a refrigerator in each of the eighty-one flats, and a notice advertising the fact was recently placed outside. The owners have since stated that the Company's advertisement has been of considerable help in letting the flats.

Then the 400 odd flats built by the Guinness Trust, Loughborough Park, have been serviced by the Company to give the incoming tenants the choice of either a prepayment or an ordinary type meter. In addition, the Company is supplying and fixing 383 gas coppers and 258 panel gas fires. Gas is also playing a big part in providing the comforts of Fairfax House, Beaconsfield Road, Blackheath. Central heating is supplied by a six-section "Rex" Potterton boiler and a three-section boiler is employed for water heating. Gas is also used for cooking, and gas fires are fitted in many of the rooms.

A block of thirty-six dwellings for the housing of married soldiers and non-commissioned officers is nearing completion in Artillery Place, Woolwich. Each dwelling will be supplied with a gas cooker and wash boiler. Hitherto the usual practice has been to provide facilities for the use of coal only, as this has been the fuel ration issued by the War Department. In future gas, supplied to the tenements by check meters through a master meter, will be issued as a fuel ration in lieu of its equivalent in coal.

The Company has recently installed eight 1,000 candle-power high-pressure lamps for floodlighting the Greenwich Borough Council's Baths, Trafalgar Road, Greenwich.

A Fine Record

Clapham Bros., Ltd., Celebrate Centenary

In celebration of the centenary of Clapham Bros., Ltd., Gas Plant Makers and Iron Founders, Nelson, Market, and Wellington Foundries, Keighley, the staff and employees of the firm and their ladies recently enjoyed a trip to Llandudno.

The company, which numbered 520, including employees of Messrs. John Lund, Ltd., Eastburn Foundry, Keighley, an associate firm taken over five years ago, travelled in two specially chartered trains. Breakfast was served *en route*, and after lunch at Payne's Café Royal, Llandudno, a hearty vote of thanks was accorded the Directors for their generosity by Mr. Austin B. Auty, Assistant General Manager, who paid tribute to past and present members of the Board. He said that it was to their credit that the firm had stayed the course for 100 years, and more so when they considered the difficulties with which at times the engineering industry had been faced.

Mr. J. D. Scaife, General Manager, Messrs. John Lund, Ltd.; Mr. Uel Stowell, former Commercial Manager, Clapham Bros.; and Mr. Albert Grindrod, another former employee, all spoke in support of the resolution, which was carried with acclamation.

Mr. T. Alborn Clapham, Chairman of the Directors, thanked past and present employees for their loyalty and co-operation throughout the firm's existence.

Mr. Samuel Clapham and Mr. F. W. Clapham, Directors, were also in the party, but Mr. Harold Clapham, another member of the Board, was unable to make the journey. Supper was served on the return journey, Keighley being reached in the early hours of Sunday morning after a memorable and delightful day.

An excellent brochure has been prepared by the firm to mark this great occasion, and we were lately privileged to receive a copy from which we learn the following interesting facts—milestones in the history of an enterprise closely identified with our Industry: In the first year of the reign of Victoria, John Clapham started business as an iron-founder in Keighley. Thirteen years later, having in the interim taken his two brothers, Thomas and William, into partnership, John and his brothers built the Wellington Foundry. Twenty years later they built an additional factory at Lawkholme Lane, and shortly afterwards

further premises were acquired in Market Street adjoining the first works.

In 1893, after fifty years without a change in the original name of Clapham Bros., John Clapham retired from the business, and it was converted into a Limited Liability Company, the first Directors being Thomas Clapham (Chairman from 1893 to 1899), his son, Samuel B. Clapham (Chairman from 1906 to 1915), William Clapham (Chairman from 1899 to 1906), and his son, Thomas S. Clapham, who also acted as Secretary. On the deaths of Thomas and William, their places on the Board were taken by their respective sons, William S. Clapham and Walker Clapham.

In the year 1915 the firm had the misfortune to lose by death three of its Directors, Thomas S. Clapham, at that time well-known in the Gas Industry as a Past-Chairman of the Society of British Gas Industries, Samuel B. Clapham, and Walker Clapham. T. Alborn Clapham, General Manager, Fredk. W. Clapham, and Samuel Clapham, joined the Board, William Sugden Clapham becoming Chairman, which position he filled until his death in 1936. Samuel Clapham died in 1926, and their places have since been taken by Harold Clapham and Samuel Clapham, sons of the former. Thus the present Board, three being brothers, and all grandsons of the original founders, maintains an unbroken family connection over a period of 100 years.

THE TOTTENHAM AND DISTRICT GAS COMPANY'S

New Showrooms AT Enfield

The amenities of Enfield have been enhanced by the erection of splendid new showrooms by the Tottenham and District Gas Company in Sydney Road.

Exterior View.

That the erection of the new showrooms of the Tottenham and District Gas Company at Palace Chambers, Sydney Road, Enfield, would be the means of opening a new shopping and business centre was mentioned in speeches at the formal opening of the premises on July 20.

The handsome three-storied building with its imposing façade has received modern treatment throughout. It includes a showroom, offices, storerooms, and demonstration theatre. Each row of seats in the demonstration theatre, when fitted, will be raised on tiers ensuring a perfect view for well over 100 people. Frequent demonstrations and film performances will be given.

The showroom is of the " open " window type, the windows being floodlighted. At the rear of the premises is a yard and depôt.

The new premises represent a great advance on the old Market Chambers in Church Street, previously occupied by the Enfield branch for 23 years. The steady increase in the number of local consumers made the new premises essential.

Opening Ceremony.

Councillor H. Muspratt, O.B.E., Vice-Chairman of the Enfield District Council, formally declared the premises open after unlocking the door, in the presence of other members of the Council and officials and prominent local people.

At tea in the demonstration room, Mr. Henry Woodall, M.Inst.C.E., Chairman and Managing Director of the Company, said the Company's business had increased and more in the way of showrooms than in any other. There was in the building a considerable amount of apparatus spaciously arranged so that it could be viewed properly. As business grew the showrooms at Market Chambers became too small. Fortunately the Company had the property in Sydney Road and were able to build the new premises. " I think it is a good thing for the town," he added, " for we have erected a building of which both the town and ourselves should be proud and we are opening a new shopping centre for Enfield. The demand for business premises is greater than the supply, and I think we did right in putting up something entirely new."

Continuing, Mr. Woodall said he thought the housewives of Enfield would find much that was interesting and instructive there. " We want to show you how to use our gas to the best advantage," he said. A great deal of progress, went on Mr. Woodall, had been made in the manufacture of gas apparatus, and they were grateful to the makers of the apparatus for their enterprise in providing cheap and economical methods of using gas to advantage.

Mr. Woodall then presented Councillor Muspratt with a golden key as a memento of the occasion.

Councillor Muspratt extended the thanks of his fellow Councillors and the officials and himself to the Company for the invitation to attend.

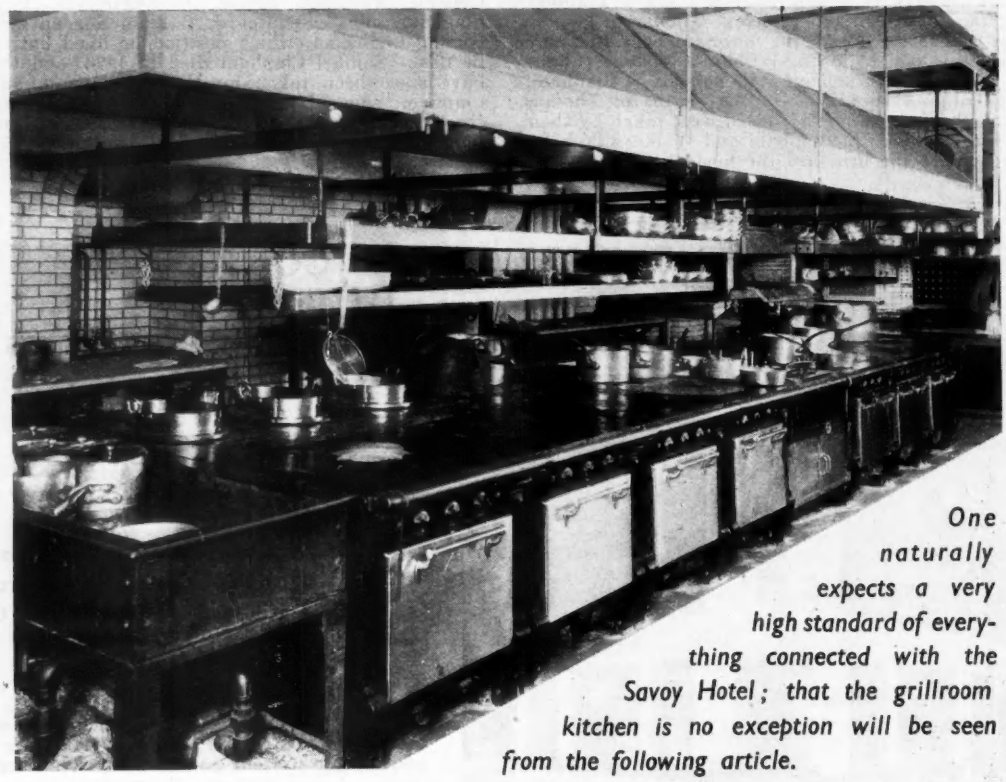
A Glimpse of the Interior.

" This is undoubtedly a very beautiful showroom," he said, " and it will add much to the amenities and architecture of Enfield. It is slightly off the usual shopping route, but it will attract people by its beauty."

Councillor Muspratt said the Council's many business relations with the Company were all very pleasant ones.

The following Directors of the Company were present: Messrs. Edward Woodall, H. G. Palmer, C. S. Pryor, and T. Hardie. The Chief Engineer, Mr. H. C. Smith, M.Inst.C.E., was also present.

GAS COOKS FOR THE EPICURE



One naturally expects a very high standard of everything connected with the Savoy Hotel; that the grillroom kitchen is no exception will be seen from the following article.

In the past chefs have on the whole been against gas because of the supposition that certain culinary operations could not be efficiently carried out on a gas stove. That idea has been disproved, and it is now recognized that gas can fulfil every function perfectly while possessing all its other well-known advantages. So says Mr. George Reeves-Smith, Managing-Director of the Savoy, Berkeley, and Claridge's Hotels, whose name is a by-word among the world's greatest hôteliers. His impression is that gas will gradually replace the coal stoves which still predominate numerically in kitchens which serve the finest food to the most discerning public.

The statement was made by Mr. Reeves-Smith at a luncheon given at the Savoy Hotel last Thursday by Mr. Stanley J. Benham, Chairman and Managing-Director of Messrs. Benham & Sons, Ltd., who have lately completed the installation of a magnificent gas range in the grillroom kitchen of the Savoy Hotel.

"An Advance on Anything Made Before."

The range is of the solid-top type with variations. It covers an area of 128 sq.ft. and is 22 ft. 1 in. long by 5 ft. 10 in. wide. There are twelve ovens, each of which is externally heated and is fitted with an insulated fall-down door. Each oven is 24 in. wide by 15½ in. high—eight being 24 in. deep and four 30 in. deep. Over each of the twelve ovens is fitted one of Benham's special patent "Chef" burners, which give the concentrated heat required in first-class cooking. The boiling plates are all finned on the underside, giving greater strength and greater efficiency.

In the centre of the range there are two large steam bain maries, each 36 in. by 30 in. by 9 in. deep inside, and under each bain marie is an unheated cupboard 36 in. wide by 24 in. deep, fitted with two shelves and hinged folding doors. Over each of the bain maries is a gas salamander (one each side), inside dimensions 36 in. by 36 in. open back and front, of the straight through type.

At one end of the range is a fish frying section 5 ft. 4½ in. long by 2 ft. 6 in. wide, fitted with three stainless steel fish frying pans with powerful burners under each. A steam heated hot closet with sliding doors is fitted under the fish frying section.

The range is connected into an underground iron flue which conveys the products of combustion to the ascending brick chimney; and over the whole of the range (except where the salamanders come) is a double pot rack supported by columns.

Cool, Clean, and Adaptable.

The rush of the luncheon cooking was over by the time the visitors made their inspection; but there remained several chefs at work, and it was clear even to the uninitiated that gas with its infinite controllability and range of temperature is equally suitable to the chef as to Mrs. John Bull with her plain oven and vegetable saucepan. While cleanness, in the absence of solid fuel, was to be expected, the coolness of this kitchen was remarkable, and the visitors were assured by members of the Savoy staff that even when the whole range is in full swing, with the hotplates glowing red, the temperature is comparatively low—in the old days of the coal range work was carried on in a kitchen temperature considerably higher than that now prevailing with a gas range in use.

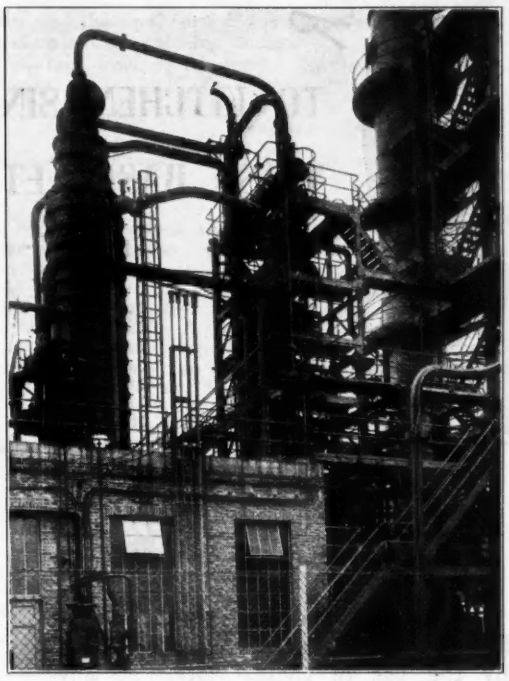
A Milestone.

Mr. Stanley Benham, welcoming his guests at the luncheon, reminded them that his firm was considerably over 100 years old, but that they must keep progressing if they were going to maintain their position. In their progress there were certain definite milestones. He still considered that the kitchens they fitted up for Harrods seven or eight years ago were a great advance on anything else that had been done up to then in this country—many of the visitors had seen them. The results had far exceeded their expectations, and at the present time they were dealing with enquiries from Australia, South Africa, Canada, and Wales—all from people who had visited Harrods. Now once more he thought this Savoy stove showed a great advance on anything of the sort ever made before. Here again they had had to deal with customers of the best possible type, who wanted the best and did not quibble unduly about cost so long as they (Benhams) were reasonable and did not take advantage of it. There were not many Savoy Hotels in the world, and he doubted whether they would often, if ever, reproduce this stove; but they could introduce the same features on a smaller scale. Mr. Benham concluded by introducing Mr. Reeves-Smith, who had just passed his diamond jubilee with the Hotel Industry and had known Messrs. Benham for fifty years.

Mr. Reeves-Smith said that he first called upon Benham's 40 years ago, and even then the firm had a character which might be termed "old English"—they produced goods not cheap but warranted to last. He was not surprised that they were able to progress and produce as they did, because he knew of the many journeys they had made to the Continent and to America, whence they culled the latest ideas and information like any up-to-date surgeon.

Sir David Milne-Watson, proposing a vote of thanks to Mr. Stanley Benham, said that gas administrators were quite convinced of the possibility of gas for large-scale cooking operations, and what they had just heard from Mr. Stanley Benham and Mr. Reeves-Smith was most encouraging. It meant a great deal to the Gas Industry to connect up in this way with the Savoy, whose reputation and cooking were second to none, and Mr. Benham was to be congratulated for having produced a range which was a credit, not only to the firm he represented, but also to the Gas Industry.

The Removal of Organic Sulphur Compounds



Left.—Plant for Organic Sulphur Removal at the Kensal Green Works of the Gas Light and Coke Company.

This is a subject which is at present engaging a great deal of attention in the Gas Industry, both from those directly concerned with the Engineering side and from those responsible for Sales and Distribution. It might, therefore, be considered a suitable time to relate briefly what progress has been made in the development of a process designed specifically for the removal of organic sulphur compounds, combining also the recovery of benzole and the removal of naphthalene.

We refer herein to two processes for removing organic sulphur compounds from coal gas by absorption in oil, which were developed independently—one by the Gas Light and Coke Company, and the other by Messrs. W. C. Holmes & Co., Ltd., of Huddersfield. In view of certain features being common to both processes, an agreement has been concluded whereby Messrs. W. C. Holmes are granted an exclusive licence for the patent held by the Gas Light and Coke Company, and undertake the construction of plants which are the subject of patents taken out by either company.

The principal feature in each process is that the organic sulphur compounds and benzole are absorbed in a benzole wash oil such as gas oil, straw oil, or creosote, by circulating a quantity equivalent to 35-40 gallons of oil per 1,000 cu.ft. of gas washed at normal temperatures.

By this means some 75% of the sulphur compounds are removed from the gas, leaving the organic sulphur content usually about 8-9 grains per 100 cu.ft. at S.T.P., and the naphthalene content about 1 grain per 100 cu.ft. Benzole is absorbed simultaneously to the extent of about 85% of the initial benzole content of the gas. The next stage in the process is to remove the organic sulphur compounds, naphthalene, and benzole from the wash oil by steam distillation, as in a standard benzole recovery plant. The oil is then returned to the circulating system to complete the cycle.

Since the quantity of oil required by the washing cycle is about four times that normally employed for benzole recovery, it is apparent that the major items of cost will be steam and cooling water, which are approximately proportional to the oil circulated. Consequently all possible means are taken to effect economies in the amount of steam and cooling water used.

Oil-to-oil and vapour-to-oil heat exchanges are employed in both systems, after which further economies are effected by modification in design from that of the standard oil stripping plant.

In the Holmes process preheaters specially designed for low-pressure exhaust steam are used, together with stills designed specially for low-pressure exhaust steam carrying out the distillation at atmospheric pressure. In the process developed by the Gas Light and Coke Company the distillation is carried out under partial vacuum. This allows a lower temperature to be used than would otherwise be possible, and less steam is therefore required to heat the oil. The quantity of steam required to distil off the sulphur compounds is also reduced owing to the expansion in volume which occurs under reduced pressure; for example, 1 lb. of steam at the vacuum normally used is as effective as 3 lb. of steam at atmospheric pressure. The conditions are adjusted so that very little additional live steam is required in the process, the exhaust from the engine driving the vacuum pump and from the turbines driving the centrifugal oil and water pumps providing practically all the steam required for heating and distilling the oil.

It should be stated that when reducing the sulphur compounds content to below 10 grains per 100 cu.ft. by these wash oil processes, it is not essential to remove the whole of the benzole up to, say, 85%. The quantity of benzole desired to be recovered can be adjusted at will in the following manner.

The vapours from the still are separated into three fractions. The first, or heaviest, of these consists of naphthalene, heavy hydrocarbons, and any oils distilled from the wash oil. The second or intermediate fraction consists of medium heavy benzole—*i.e.*, benzene, toluene, xylene, and other hydrocarbons of similar boiling range. The third or lightest fraction consists of light benzole and sulphur compounds.

The third and the intermediate fractions would be saleable as benzole, but any quantity of the intermediate fraction may be returned to the wash oil without detriment, as it is free from either naphthalene or organic sulphur compounds.

Consequently the amount of benzole recovered and sold can be varied by varying the amount of the intermediate fraction returned to the wash oil, while still obtaining the required extraction of organic sulphur compounds and naphthalene.

It will be appreciated from the foregoing how the process would be operated in the case of a works desiring to remove naphthalene and organic sulphur compounds, but for which it would be permissible to recover only a small quantity of benzole on account of having a high declared

Instantaneous supply of HOT WATER

TO KITCHEN SINK, WASH BASIN, ETC.

The "Prestot" is supplied in two forms. The Standard form has hot and cold water taps neatly finished with bakelite covers, coloured red and black respectively. By the use of these, water at any temperature from cold to very hot can be obtained at will. Other features include the bye-pass safety device ; automatic gas and water valve ; rust-proofed cast iron burner with independently fixed burner jets ; combustion chamber of the non-condensing type ; flexible fixing.

The Alternative form has a single hot water tap, and is normally for use where more than one water tap is already available at the sink. It is further equipped with a swivelling chromium-plated outlet spout attachment.

The water can be used for culinary purposes, whether hot or cold.

The finishes are white, green or blue porcelain enamel. The fittings are chromium-plated.

Full particulars and descriptive literature obtainable on request.

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INSTANTANEOUS WATER HEATER

R. & A. MAIN LIMITED, LONDON AND FALKIRK

London Office and Showrooms: 48, Grosvenor Gardens, S.W.1. Glasgow Office and Showrooms: 82, Gordon Street.

calorific value and/or carbonizing plant that could not be used to make high calorific gas with economy.

In 1935 the Directors of the Gas Light and Coke Company decided to treat the whole of the coal gas at the Kensal Green Works, amounting to 7 million cu.ft. per day by the vacuum distillation process. The plant was designed throughout by the Chemical and Engineering staff of the Company and was ready in February of this year, since when it has been working continuously at full load without any alterations apart from minor adjustments to secure better control and more efficient steam economy. It is entirely self-contained in that the cooling water is recirculated over a cooling tower. All the pumps —oil, water, and vacuum—are housed in a building the top of which provides the base for the still, and the heat exchangers, coolers, and heaters are supported on a structure situated between the pump house and the two tower scrubbers. The design is, therefore, exceedingly compact and the area occupied is no greater than that of a benzole plant of orthodox design.

The average working results for the first 3½ months are as follows:

Sulphur in	34·0 gr per 100 cu.ft.
,, out	9·7 ,, ,,
Benzole recovered	3·7 galls. per ton
Steam used	38·1 lb. per gallon of benzole

The benzole produced is of the average quality for the mixture of continuous vertical and inclined retort gas treated and is almost entirely free from wash oil. Since calorific value permits, no attempt is made to limit production. The plant has been free from sludge troubles during the five months it has been at work, and there has been no deterioration in heat exchanger performance, although gas oil only has been used without any replacement. There is evidence to show that the lower distilling temperature not only favours the efficient separation of the benzole from the oil, but also reduces greatly the rate of sludge formation.

Plants in the Provinces.

Plants in which the distillation of the wash oil is carried out at atmospheric pressure using exhaust steam have been in operation for several months at the works of the Mirfield Gas Company, and at the Longwood Works of the Huddersfield Corporation Gas Department. At both these works the absorption is carried out in brush washers, using in one case a rotary brush washer, and in the other a Multifilm washer.

The average working results are given below:

Mirfield Gas Company.

Gas treated (maximum hour)	20,000 cu.ft.
Inlet organic sulphur content	20–22 gr per 100 cu.ft.
Outlet organic sulphur content	7·5–8·5 ,, ,,
Benzole recovered	50%
Oil circulation	600 galls. per hour—*i.e.*, 30 galls. per 1,000 cu.ft
Steam used by plant	300 lb. per hour

Longwood Works, Huddersfield Corporation Gas Department.

Gas treated (maximum hour)	30,000 cu.ft.
Inlet organic sulphur content	22–25 gr. per 100 cu.ft.
Outlet organic sulphur content	7–9 ,, ,,
Benzole recovered	35%–40%
Oil circulation	800 galls. per hour—*i.e.*, 26·6 galls. per 1,000 c.ft.
Steam used by plant	360–400 lb. per hour

The foregoing data show the performance of plants embodying distillation under vacuum and alternatively at atmospheric pressure applied to works of markedly different sizes. They illustrate also the possibility of varying the quantity of benzole recovered, while simultaneously maintaining the desired efficiency with regard to the removal of organic sulphur compounds.

As the economics of benzole recovery are subject to the influence of the variation in such factors as the market price of motor spirit, coal, coke, and oil, it is distinctly to the advantage of the process that it provides flexibility with regard to the amount of benzole to be recovered with uniform efficiency in removing organic sulphur compounds.

During the development of their process, Messrs. W. C. Holmes & Co., Ltd., found it desirable to devise a method of determining the organic sulphur content of gas which was quick and could be reproduced with consistent accuracy, for the purpose of routine control tests. It is with a feeling that this method may be useful to engineers studying this subject that details of the method of testing ultimately adopted are given below:

Estimation of Sulphur in Coal Gas.

The apparatus which has been found most satisfactory is a modified form of one supplied by Messrs. Baird and Tatlock (Cat. No. T.C. 1302) for the estimation of sulphur in benzole. The benzole reservoir is removed and the gas supply brought in through the base plate and in the centre of the chimney. The gas tube should not be more than 0·1 in. in diameter and the gas should be burned at least 3 in. above the level of the air inlet tube.

With gas of low sulphur content (say, 12 grains per 100 cu.ft.) about 0·5 cu.ft. should be burned at the rate of about 0·3 cu.ft. per hour. With gas of a higher sulphur content, less gas may be burned at rather a slower rate.

The absorbing solution is a mixture of 25 c.c. of 20 volume hydrogen peroxide and 75 c.c. of distilled water. It is neutralized with N/10 or N/50 hydrochloric acid or sodium carbonate using about 6 drops of a 0·04% solution of brom-phenol blue as indicator. This indicator is yellow in acid, blue in alkaline, and practically colourless in neutral solutions. For routine tests, N/10 solutions may be used, the absorbing solution being neutralized until the first trace of blue appears. The final titration should then be accurate to 0·1 c.c.

For more accurate estimations, it is advisable to use N/50 solutions and to use Nessler tubes with special plane glass bottoms for determining the end point. An additional 50 c.c. of the absorbing solution should then be made up, the whole neutralized, and 50 c.c. kept in a corked Nessler tube as a reference colour to which the absorbing solution will ultimately be neutralized, a second Nessler tube being used for making the comparisons. Alternatively, a buffer solution may be made up to give a permanent standard colour. The composition of the buffer solution is:

0·65 c.c. N/5 HCl 10 c.c N/5 KHPhthalate 5 drops indicator	make up to 50 c.c.

Before starting the estimation, the combustion gas scrubber should be well flushed with the absorbing solution and the air scrubber with sodium carbonate solution. Care should also be taken to ensure that the chimney is well sealed in mercury. During the estimation the suction on the apparatus should not be more than is necessary for complete combustion.

After burning the necessary amount of gas the scrubber should be thoroughly washed with distilled water (previously neutralized to the reference colour) and the solution titrated with the standard sodium carbonate solution.

1 c.c N/10 carbonate	0·0016 gm. sulphur
1 c.c. N/50 ,,	0·00032 ,, ,,

NOTE.

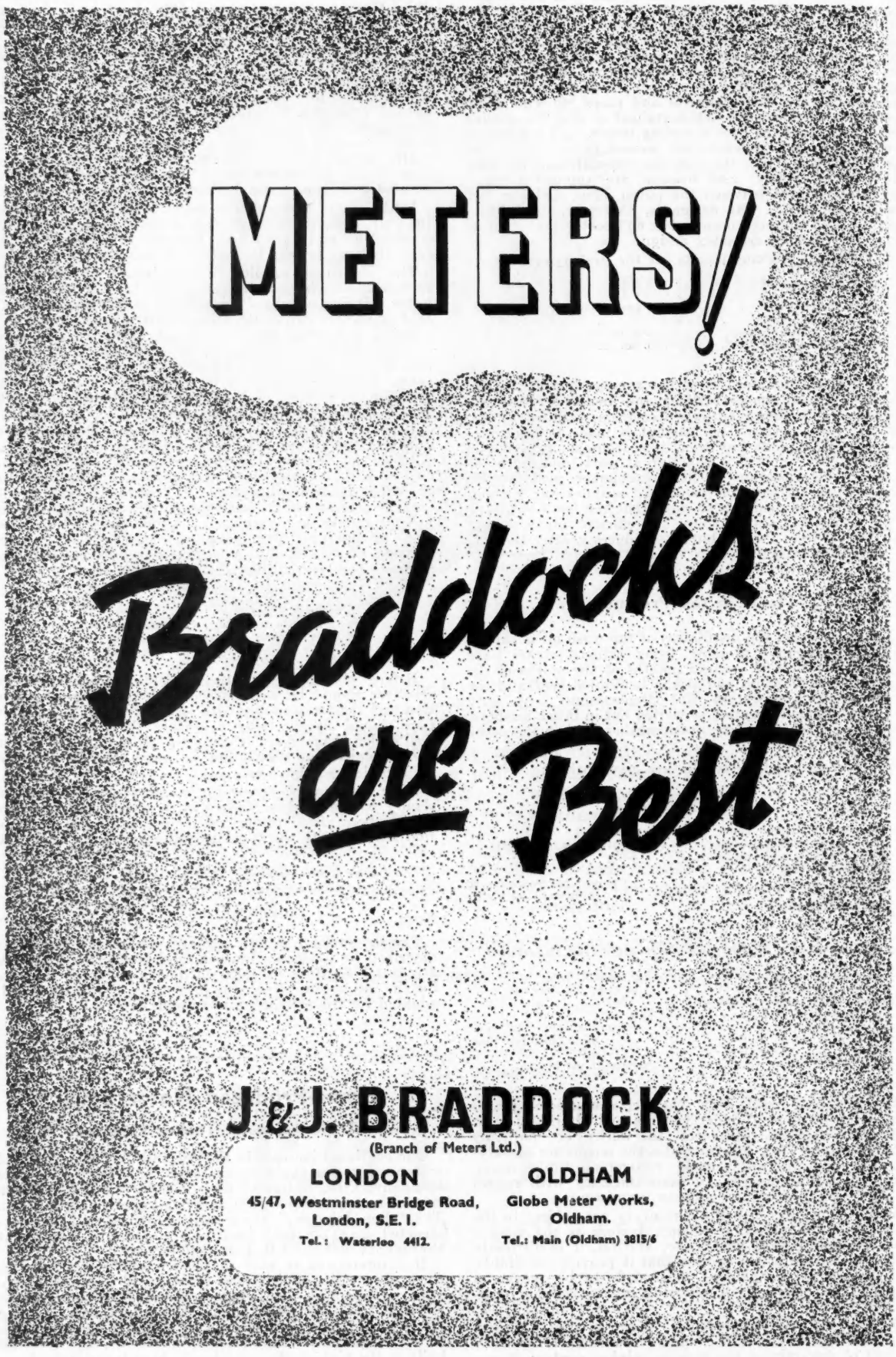
The operation of a similar apparatus has been described by Claxton, Hancock, and Hoffert in the "GAS JOURNAL" for July 13, 1932. Although primarily intended for the estimation of sulphur in benzole, it can be readily adapted for the estimation of sulphur in gas.

Home-Produced Motor Spirit

A New Coastal Tanker Ordered

The continual increase in the demand for home-produced motor spirit has again necessitated the National Benzole Company, Ltd., adding to their fleet by the building of a coastal motor vessel with a carrying capacity of 220 tons. The "Ben Johnson," as she will be named, is being constructed near Colchester, and the vessel and her equipment throughout will be of British manufacture.

It is interesting to note that much of the steel used in the construction of this new coaster will be supplied by steel makers who also produce National Benzole motor spirit at their coke ovens. The "Ben Johnson" is being fitted with diesel engines and a discharging pump capable of dealing with 100 tons of spirit per hour, and is being built to the highest class of Lloyd's Register of Shipping.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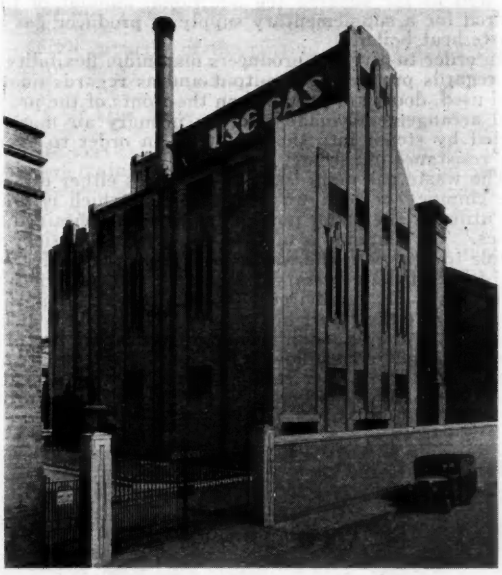
WOODALL-DUCKHAM UPWARDLY-HEATED VERTICALS

in Works Reconstruction at Ilkeston

There was inaugurated on Friday last a scheme which has resulted in the complete reconstruction and re-organization of both the manufacturing and administrative and distributive sides of the Ilkeston Gas Department.



The imposing exterior of the Retort House.

The Ilkeston Gas Light and Coke Company, formed in 1847, was acquired by the local board in 1879 at a cost of £25,000, while in 1887 Ilkeston became a borough. Since the old works were acquired by the Corporation, and in consequence of continued expansion, various additions were made to them. In 1901 a new engine house and purifier house was erected, while in 1908 a new retort house was built and new carbonizing plant installed. A report on the works was presented in 1934, and it was then decided to reconstruct the whole of the undertaking. The sanction of the Ministry of Health to the raising of the necessary loans having been obtained, contracts for plant were placed as follows:

The Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd.—Continuous vertical retort installation, complete with coal handling, coke grading, and waste heat boiler plant, railway sidings, loco., and coal stores.

Newton, Chambers, & Co., Ltd.—Condensers, tar extractor, Livesey washer, rotary washer, purifiers, oxide handling plant, tar and liquor separator, generators, exhausters, boosters, benzole plant, gas mains and valves, tar and liquor mains, steam mains.

A. H. Harris & Sons.—Foundations and buildings for offices, fitting shops, garage, engine house, boiler house, washer house, benzole house and extensions to purifier house, messroom. Henry Pooley & Son, Ltd.—Automatic weighbridge and removal of truck weighbridge to new site. W. & T. Avery, Ltd.—Automatic coal weigher. J. G. Bowes.—Tools and workshop equipment. British Furnaces, Ltd.—Incinerator. J. W. Jackman & Co., Ltd.—Sand blast plant. B. E. N. Patents, Ltd.—Paint-spraying plant. F. J. Ballard & Co., Ltd.—Stoving plant. G. N. Haden & Sons, Ltd.—Central heating.

Work actively commenced on the site in September, 1935. The new gas-making plant, including the retort installation, purifiers, washers, &c., was put into operation on Sept. 23, 1936. The scheme embarked upon was comprehensive, and has resulted in a complete reconstruction and reorganization not only of the actual gas-making side of the undertaking, but also of the administration and distribution equipment.

The offices have been entirely reconstructed internally, and equipped on modern lines, serving the dual purpose of administration and stock showrooms. Above the offices are a well-equipped general stores, meter stores, and testing room. The old horizontal retort house alongside the new carbonizing plant has been divided into two halves, one of which is now used as a coal store, arrangements having been made to deliver coal into this store by means of the handling plant for the new retorts. The other half of the old horizontal retort house accommodates a modern cooker renovation plant consisting of a gas-fired incinerator for removing grease, a sand blast plant for cleaning castings, and a spraying and stoving plant. The laboratory has been removed from the offices and accommodated in the new retort house, the old laboratory having been converted to a testing room for the use of the Gas Referees. New messrooms have been provided for the convenience of the men, and a mains and service depôt has been arranged in a convenient corner of the works. Careful consideration has been paid to lighting and ventilation, so that the men now work under ideal conditions. The whole layout is completed by well-arranged roads and paths, a small lawn and flower border have been laid at the base of the retort house, while a grass verge encircles the new engine house. The whole appearance of the works suggests careful planning, and the clean design and accessibility ensure a high degree of efficiency.

The New Carbonizing Plant.

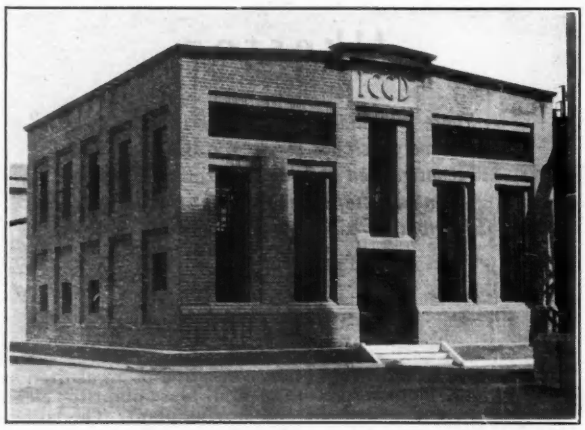
The new installation consists of one bench containing twelve latest type upwardly heated Woodall-Duckham continuous vertical retorts and is capable of carbonizing 65 tons of coal and of producing 1,244,000 cu.ft. of 460 B.Th.U. gas a day. The gas used for heating the retorts is made in three producers situated at ground floor level at one side of the bench. The installation is provided with complete coal and coke handling and coke screening and storage plant, and with a waste heat boiler, and is erected in a steel-framed brick-panelled retort house of strikingly modern design.

Cooker Renovation Shop (Removing Load of Cookers from Incinerator).

The retorts are about 25 ft. high.

The Woodall-Duckham system of upward heating in vertical flues, which follows the natural flow of the hot combustion gases, is particularly simple to put into operation and to control. When the heats have once been regulated, only the producer gas and waste gas dampers need

adjustment. By the introduction of the upwardly-heating principle the temperature in the vertical combustion flues is sufficiently reduced, at the point where erosion of the silica normally takes place, to allow the retorts at this level to be constructed with perfect safety in firebrick. By the time the coal has travelled past this belt of firebrick and enters the silica portion of the retort, it has acquired sufficient heat to avoid the extreme differences in tem-



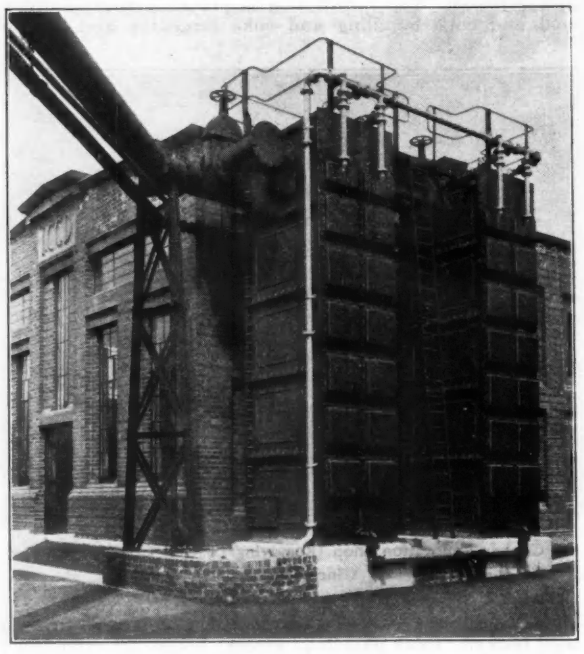
View of New Engine House.

perature on either side of the retort wall, which are the main cause of the erosion of silica material at this point. In this way the full advantage of silica construction as regards high throughput of coal is obtained, with a reduction in maintenance costs.

Both the side walls and the top of the bench are efficiently insulated, with the double object of improving the working conditions and saving fuel.

An electrically driven 30-cwt. lift is provided to convey goods and passengers to the various platform levels and to act as standby handling plant whereby skips of coal and coke may be elevated to the top level of the overhead storage hoppers should the coal or coke handling plant at any time be out of commission.

To clear the mains of air at starting-up or after shut-down periods, a blow-off pipe is provided on the foul main complete with a Peebles automatic relief valve. The blow-off pipe is extended through the roof to atmosphere.



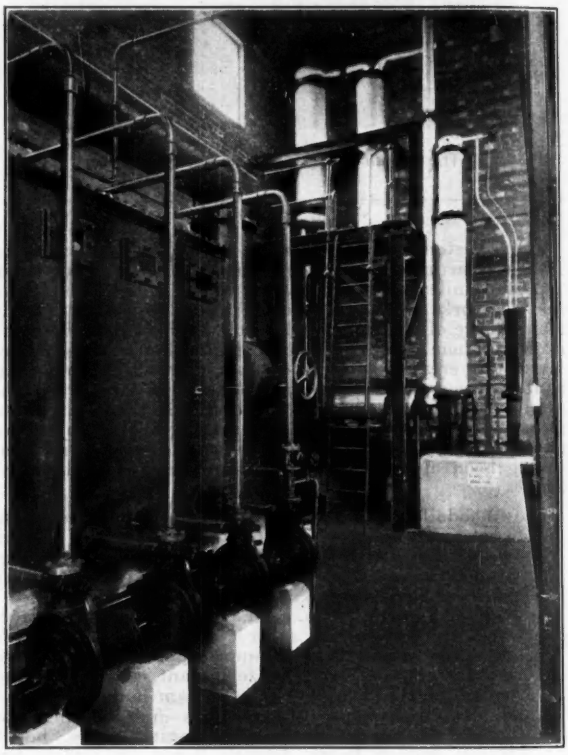
The Water-Tube Condensers.

To supply the gas for heating the retorts three producers are provided at the retort house floor level at one side of the bench. The producers are arranged so that any producer may be shut down without interfering in any way with the working of the other producers. The gas from any of the producers may be taken to any of the retorts.

The producers are of the step-grate type and are constructed with ample grate area for the efficient heating of twelve retorts when using a mixture of coke and breeze, as well as for burning the additional amount of fuel required for a supplementary supply of producer gas to the waste heat boiler.

In order to give the producers maximum flexibility, both as regards producer gas output and as regards quality of fuel used, doors are provided on the fronts of the producers and arrangements made whereby primary air may be injected by steam into the producers in order to overcome the resistance of the fuel bed.

The waste gas main conveys the gases either directly to the chimney or to a waste heat boiler which is provided for utilizing the major portion of the heat contained in the gases. The chimney is of steel, lined with firebrick, and is ample to deal with the waste gases from the twelve retorts and to exert the necessary draught for working the settings efficiently. It discharges to atmosphere at a suitable height above the retort house roof. The waste heat boiler, which is of the Woodall-Duckham horizontal firetube, induced draught, return-flow type, is designed for a working pressure of 120 lb. per sq.in. It is of a size to deal with the whole of the waste gases from the twelve retorts. In



The Benzole Recovery Plant.

order that the boiler may give its maximum output, if at any time some of the retorts are not in operation, provision is made so that a supplementary supply of producer gas can be mixed with the waste gases before they are passed to the boiler, a supplementary combustion flue being provided.

Coke Screening.

Coke not required for the producers is passed over a "Corts" reciprocating screen which scalps all coke of size 2½ in. and over. This over-sized coke passes over the screen either into a coke cutter or through a by-pass chute direct into the large coke compartment of the storage bunkers beneath. The coke cutter, which is also a "Corts" machine, reduces the coke to 2½ in. and under and delivers it to a secondary "Corts" reciprocating screen, this screen also taking delivery of the under-sized coke from the scalping screen.

The secondary screen grades the coke into three sizes, 0-¾ in., ¾ in.-1¼ in., and 1¼ in.-2½ in., these sizes being delivered direct to their respective compartments in the storage bunkers beneath. The storage bunkers, which have a total storage capacity of 100 tons, are of reinforced brick and steel construction, the vertical sides, ends, and division walls being formed by filling in the steel framing

with reinforced brickwork and the sloping bottoms being steel, lined with blue tiles set in cement. They are divided into four separate compartments for storing the four gradings mentioned above.

Beneath the bunkers at one side a concrete bagging platform is provided, with two portable coke weighing and bagging machines.

The overall capacity of the cutting and screening plant is 20 tons per hour.

The New Ancillary Plant.

From the vertical retort house an 18 in. diameter mild steel welded main conveys the gas to a battery of water tube condensers situated on elevated concrete foundations outside the power house. The condensers are of the horizontal tube type, built in two units of cast iron construction, 16 ft. high and 6 ft. wide between the tube plates, each capable of dealing with three-quarters of a million cu.ft. of gas per diem. The gas connections to the condensers are arranged overhead with double-faced valves, allowing both or either condenser to be by-passed or worked in series.

The exhausters are housed in the power house on an elevated stage, and are arranged in duplicate. Each exhauster is capable of dealing with 50,000 cu.ft. of gas per hour against a suction of 6 in w.g. and delivering at a pressure up to 36 in. w.g. The exhausters are of Messrs. W. C. Holmes' manufacture, directly coupled and driven by a Robey totally enclosed vertical high-speed forced lubrication steam engine. The gas, after being drawn through the condensers by the exhausters, is forced under pressure through overhead pipes, passing through the roof of the power house and across to the washer house, where it enters the P. and A. tar extractor.

Duplicate Connersville gas boosters, each capable of compressing 6,000 cu.ft. of free gas per hour, are located in the power house on an elevated stage in line with the Connersville exhausters. Fitted to the wall in close proximity to the boosters is a battery of Cambridge pressure gauges indicating the vacuum or pressure at all points of the washing, purifying, or condensing plant.

Ammonia is removed in a Holmes brush type washer, driven through the medium of spur gear by a small horizontal steam engine.

The whole of the wet purification plant has been designed to deal with 1,000,000 cu.ft. of gas per day.

The purifying plant consists of four cast-iron boxes, 30 ft. by 25 ft. by 5 ft. deep inside, and fixed on an elevated staging 12 ft. 6 in. high from ground level to underside of boxes, built in a purifier house adjacent to the washer building.

Two Morris friction hoists suspended from the roof principals of the purifier house are used for handling both the purifier covers and the oxide skips. The capacity of each friction hoist is 2 tons, and by means of the remote control at one end of the building, the covers can be lifted, lowered, and moved forward or backward in a horizontal direction.

A primary gas heater is fitted in the main inlet to the purifiers and four secondary gas heaters are inserted in the inlets to each box. The heaters are fitted with mild steel steam coils suitable for a working pressure of 100 lb. per sq.in. steam pressure. All the heaters are fitted with individual control and thermometers are provided in the purifiers adjacent to the gas inlets.

In the power house two 30 kW. electric compound-wound interpolar generating sets are installed, to give a supply of direct current of 220 volts. The generators are of the Lancashire Dynamo Company's manufacture, directly driven by Belliss & Morcom single crank tandem compound high-speed vertically enclosed steam engines, running at a constant speed of 450 revs. per minute.

The benzole recovery plant, which is accommodated in a separate house, is capable of extracting 1½ galls. of 80% benzole per ton of coal carbonized. The plant consists of a Thorncliffe type static washer wherein the benzole is extracted from the gas by means of gas oil, and recovery plant in which the absorbed benzole is continuously removed from the oil, which is ultimately cooled and re-used in the scrubber. The scrubber is electrically driven, and is packed with stoneware Lessing rings which afford a very large wetted surface to the gas while creating little back pressure.

The whole of the iron and steel work has been painted with a coat of rust preventive immediately after fabrication, and on completion of erection further painted with two coats, and the whole of the various gas, liquor, tar, water, steam and condensate piping painted in distinctive colours. The inlet, outlet, and by-pass valves of all the apparatus are also picked out with a distinctive colour.

An Official Opening.

The reconstructed Works were opened ceremoniously on July 23 in the presence of the Mayor of Ilkeston, members of the Council, local officials, and visiting Gas Engineers. The company assembled at the Works at 11.30, when His Grace the Duke of Devonshire, K.G., inaugurated the carbonizing plant, after which excellent arrangements were made for guiding the visitors round the Works. An adjournment was made to the Town Hall for luncheon at 1.30, after which the visitors were entertained with a cinema show at King's Picture House, Ilkeston. A very interesting day was rounded off with afternoon tea at the Gas-Works.

Gas Hotplates on Electric Cookers

Judgment against the Egham and Staines Electricity Company

As mentioned in the "JOURNAL" last week, on July 19 Mr. Justice Farwell gave judgment against the Egham and Staines Electricity Company, Ltd., in an action in which they claimed an injunction to restrain the defendants, the Gas Light and Coke Company, from procuring or inciting any persons who had entered into agreements with the plaintiff Company for the hire of electric cookers to permit the affixing to those electric cookers of gas hotplates. An injunction was also asked to restrain the Gas Light and Coke Company from affixing gas hotplates or similar apparatus to any electric cooker hired by the plaintiffs to their consumers.

In the course of his judgment his Lordship said that according to the evidence of some of the excellent people who had come before him, and told him their experiences in these matters, an electric cooker had, or might have, one disadvantage over heat obtained by gas in this way, that starting, as it were, from zero, when the electric power was turned on it took a little time for the hotplate to get hot enough to boil the water in the kettle, or whatever operation it was desired to be done, whereas with the gas ring, and the use of gas, by turning on the gas and applying a match the heat was obtained at once, and in that way the boiling, or whatever the operation is, could be more quickly performed with the gas rather than with the electricity.

"Is the use of these hotplates, or other of them," continued Mr. Justice Farwell, "placed on the top of the electric cooker an alteration or an addition to the apparatus? If it is not, then this part of the action necessarily fails. I will deal first with the Argyll hotplate. I have endeavoured in a few words to expain a little what it looks like, and I have said it is not a very heavy thing. It is a thing which is quite easily moved about. It has a flexible tube which enables it to be placed not only in one position but in a choice of positions in the room; in fact, as one of the witnesses told me in the witness-box, his wife is accustomed to have it on the top of the electric cooker when she wants to use it for heating water, or things of that sort, and then to put it back in the cupboard, where it would ordinarily remain. It is quite plain it can be used anywhere, and not in the least only on top of the cooker. In those circumstances, in my judgment and with the utmost respect to the extremely able argument I have heard from Sir Walter Monckton, to suggest that an Argyll hotplate is an alteration or addition to the apparatus seems to me to border on the ridiculous. I cannot imagine how it can be suggested that to take a thing like this hotplate and put it on the top of the electric stove, from which position it can be moved at any moment, is in any sense to alter or to add to the apparatus. I gather the suggestion is that if you put the Argyll hotplate on the top of the electric cooker, you thereby prevent yourself from using the hotplate on the electric cooker at the same moment, and that that, somehow or other, constitutes an alteration or an addition to the apparatus. I wholly fail to appreciate it. It seems to me it is no more an addition or alteration to the electric cooker than if a person had a small lamp, which was heated by methylated spirit, and used it for the purpose of boiling some water, or something of that sort, in a small saucepan, and for her or his own convenience put it temporarily on the top of the electric cooker and did not use the electric cooker at the same time. To suggest that a person who did that was altering or adding to the electric cooker, seems to me would be absolutely ridiculous, and I cannot myself see, in the case of the Argyll hotplate, that there is anything whatever which could be even suggested as constituting a breach of this term of the agreement. It affords no sort of obstacle or diffi-

culty to the Plaintiffs in any Statutory duty they have to perform in connection with their electric cooker. The housewife, or the person who is using it, may please herself where she has it. She may one day find it more convenient to have it on the electric cooker, and she may think it more convenient on another day to have it somewhere else, and there is nothing whatever to prevent her putting it where she pleases.

"If I were to hold that this operated so as to prevent a user of an electric cooker having an Argyll hotplate in the same room, I should really be doing something which would be preventing the consumer from exercising that free choice that he or she has of using either electric light, or gas, or both; and, in my judgment, such a construction of this document would be impossible, and even if possible, most undesirable. I do, in connection with that, desire to say this: These two Companies, the Plaintiffs and the Defendants, are both Statutory bodies. They both have privileges and correlative obligations. Their privileges, among others, are to be the only suppliers of the particular power which they produce in the particular area. Their obligations are to supply to those persons who desire it and will pay for it the power which they produce, and both are entitled, within proper limits, to make the best of their particular products, and to endeavour to promote the sale of their own products even at the expense of their rival; but in my judgment, the public have an undoubted right to determine for themselves whether they will use electricity or whether they will use gas, or whether they will use both. That is a right in the public which has been recognized by Parliament, and the recognition of that is to be found in the two Statutes to which I was referred. In those circumstances, in my judgment, any method adopted by either one of these two Statutory bodies, which is purely for the purpose of promoting their own commercial interest but which does in fact deprive the public of that right which they have to make their own choice as to what they will use, is a method which this Court would be very slow to enforce or to countenance. . . . Having those considerations in mind, it appears to me that if I were to come to the conclusion that the Argyll hotplate was an addition or alteration to the apparatus, I should in fact be holding that a person who had elected to have an electric cooker could not, at the same time, make use of gas by means of an Argyll hotplate, because it is said, as I gather, that even if you do not place this Argyll on the top of the electric cooker, the flexible tube itself may cause a danger, and on the second part of this case may itself be ground for granting relief to the Plaintiffs.

"In my judgment, so far as the Argyll hotplate is concerned, it is impossible to hold, on the true construction of this agreement, that it is any breach of that agreement for a person who has an electric cooker to clamp the Argyll hotplate to the stove or to use it as he or she thinks fit on the top of the electric cooker. If it is not a breach of contract for the hirer, obviously there can be no wrongful act in the Defendants in supplying such a hotplate.

"Let us take the perfectly simple case of a hirer, who insists upon doing something to the apparatus which does in truth render it likely to be dangerous, and therefore make it difficult or impossible for the Plaintiff Company to perform their statutory duties, and therefore liable to penalties. The Plaintiff Company have their obvious remedy. They remain liable to perform their statutory duties, and if they cannot perform their statutory duties owing to the act of the hirer, their remedy is to say to the hirer: 'Either remove what I object to, or I shall remove the electric cooker, because I cannot perform my statutory duties if you insist on that which you are doing.' That is, in my judgment, the remedy which is open to the Plaintiffs; and where, as in this case, the Defendants are doing no more in pursuit of their trade than supplying these particular things, even if they do have the effect which it is alleged they do, they are not doing anything which, in my judgment, entitles the Plaintiffs to relief against them.

"Anybody—it does not require an electrician or an expert—could pick up the hotplate and put it down on the table or chair, or somewhere else, while the electric cooker was being opened or examined. It is said that the presence of the flexible tube, if it gets in contact with the electric cooker, and the electric cooker is not performing its duty properly, may result in some accident or danger Evidence was given of one case in which this seems to have occurred, not in this district at all, apparently the only case which the Plaintiffs in all their experience could find of any such accident. In my judgment, to suggest that the Argyll can be said to have any effect on the Plaintiffs' statutory duty is ridiculous.

"Evidence has been given by a gentleman who has told me the alarming prospects which they foresee if this sort of thing goes on. To some extent, at any rate, the proof of the pudding must be in the eating, and there were only two cases in which it has been possible apparently for the Plaintiffs to say that any real cause of anxiety has been given. One was a case where the flexible tube of the Argyll hotplate happened to come up against the electric cooker, which was not working properly, and there were sparks. The other was a case in which it was said the presence of the rod on the cooker misled the person who went down to test the electric cooker. I think the obvious retort to that is that the person who went down to inspect the electric cooker could not have been an expert person, because anyone who knew anything about the matter would have realized that the rigid iron rod might possibly have some effect. But I am not prepared to say that the Plaintiffs have made out a case for relief, even if I thought there was a cause of action on the second part of this case."

"Field's Analysis," 1936

No. 68 of the Series

We have received a copy of "Field's Analysis" for the year 1936. The accounts of forty of the principal Gas Undertakings in England, Scotland, and Ireland are dealt with in this issue. These forty Undertakings, controlled by Companies and Municipal Authorities, represented sales of gas approximating to 60% of the output of the whole of the gas undertakings in Great Britain and Ireland; therefore the figures set out in the Analysis may be taken as representative of the Gas Industry in this country. The following figures are extracted from the Analysis for the years 1935 and 1936, after adjustment has been made for the sales of gas of the two Undertakings of Halifax and Huddersfield which, it is noted, appear for the first time in the 1936 issue:

Total Sales of Gas (including Sales in Bulk and Processes).

—	1935.	1936.
	Therms.	Therms.
Company Undertakings	649,547,899	685,614,551
Local Authority Undertakings . .	256,134,301	267,643,570
Total	905,682,200	953,258,121

It will be seen by the above figures that there has been in the year 1936 a satisfactory increase in sales, equal to 5½% in the case of company-owned undertakings, and 4½% in undertakings controlled by local authorities, or in total an increase of 5¼% for both groups.

The following extracts also indicate the healthy position of the Industry:

Number of Consumers (1,000's).

—	1935.			1936.		
	Ordinary.	Prepayment.	Total.	Ordinary.	Prepayment.	Total.
Companies . . .	1,603	2,462	4,065	1,633	2,578	4,211
Local Authorities .	861	941	1,802	885	1,022	1,907
Sales of Gas—Therms per Consumer.						
Companies . . .	236	96	151	245	95	153
Local Authorities .	173	85	127	181	84	129

Street Lighting—Number of Public Lamps.

—	1935.	1936.
Companies	196,766	196,904
Local Authorities	208,381	222,046

Sales of Gas for Public Lighting—Therms (1,000's).

—	1935.	1936.
Companies	17,272	17,865
Local Authorities	18,423	20,203

Sales of Gas per Public Lamp—Therms.

—	1935.	1936.
Companies	87·78	90·73
Local Authorities	88·41	90·99

The above figures show that, after allowing for the inclusion in the Local Authority Undertakings of the relative figures for Halifax and Huddersfield, there has been an increase in the number of consumers in both sections, Company and Local Authority. The total sales of gas per consumer have also increased, although in the prepayment meter section there has been a slight decrease. The sale of gas for Public Lighting shows an increase. This increase is due to both an increase in the lamps in lighting, and also to an increase in the sales of gas per lamp. It is interesting to note that the sales of gas per public lamp closely approximates to the sales of gas per prepayment consumer. This indicates the desirability of retaining the public lighting load, for the loss of a public lamp would be equal to the loss of a prepayment consumer.

Comparison of Some of the Principal Items.

[Pence per Therm.]

—	1935.		1936	
	Companies.	Local Authorities.	Companies.	Local Authorities.
Net coal	1·312	1·529	1·300	1·470
Manufacturing charges	1·701	1·408	1·736	1·384
Cost of gas into holder (*ex* capital charges)	3·013	2·937	3·036	2·854
Distribution charges (*ex* capital charges and fittings and rental)	1·397	1·178	1·394	1·229
Net coal and working expenses	7·274	5·850	7·263	5·693
Net profit	1·288	0·832	1·242	0·877
Charge for capital	1·755	0·534	1·710	0·474
Net gas rental	7·677	7·312	7·577	7·122

The above figures are a summary of a comparative table of some of the principal items in the Analysis between the years 1935 and 1936. A complete table for all Undertakings is given in Section 5 of the Analysis for the years 1932 to 1936. A study of these figures shows a tendency for costs of production to increase, more particularly in the case of the Company Undertakings whose accounting period represents a somewhat later period than that ruling for Local Authority Undertakings. It will also be observed that there has been a slight reduction in the average price received for gas. The tendency for costs to increase and price to fall will not escape the notice of the executive officers of the several Undertakings, but it is suggested that it would be of some advantage to all those interested in business forecasting if a close study of all the figures in the Analysis were made. It may interest readers to draw attention to the advantage of large scale operations. In the case of Sheffield, this Company, owing to its unique position and its large industrial sales, is able to carry forward a surplus even when the difference between the cost of gas in the holder and the average net selling price of gas is only 2·139d. per therm. The margin required by Company Undertakings as a whole in respect of these charges during the year 1936 was 4·541d., and Local Authority Undertakings 4·268d.

In making a comparison of the figures of cost as between one Undertaking and another, it would not be out of place to remind our readers that there is to-day no standard form of accounts. The compilers of the Analysis no doubt endeavour to adjust the account figures relating to the various Undertakings to a common basis, but it would appear desirable for the accounts of all gas undertakings to conform to a common standard. The introduction of a standard form of accounts would appear desirable, and also if at the same time there was introduced a universal classification of items of Receipts and Expenditure which are to be included in each section in a standard form, a very useful purpose would be served. Perhaps our readers will let us know their views on this subject.

In conclusion, we must once again compliment the compilers, Messrs. S. H. Collins and P. F. Scarth, and their assistants, on the completion of the 68th publication of "Field's Analysis." The work is now on sale and can be obtained from the Publishers, Messrs. Eden Fisher & Co., Ltd., 6, 7, and 8, Clements Lane, London, E.C. 4. Price two guineas.

Traffic Vibration

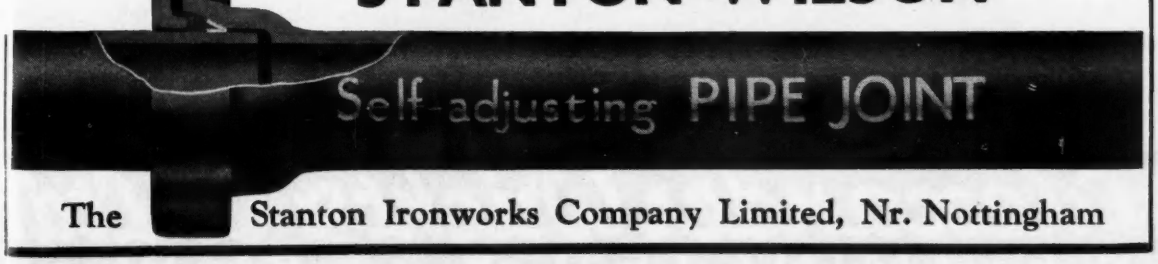
Rigid or Self-adjusting Joints?

Not many of the problems brought into being by the remarkable growth of road transport during the last decade are capable of easy solution.

There is at least one exception, however. For instance, though much has been heard of the danger caused to historic buildings by traffic vibration, the harmful effects of such vibration on water and gas mains are not so apparent. To water and gas engineers responsible, however, for the maintenance of these essential public services, this was a very real problem until a few years ago, for rigidly-jointed mains could not be expected to withstand the severe vibration caused by modern conditions.

Some six years ago the Stanton Company introduced the Stanton-Wilson Self-adjusting pipe-joint to overcome this and similar difficulties. That it has successfully done so is proved by the fact that more than 1,500 miles of Stanton-Wilson mains have now been laid by over 750 public authorities.

The STANTON-WILSON



The Stanton Ironworks Company Limited, Nr. Nottingham

For PRECISION

use SIMMANCE PATENT DEAD-BEAT INDICATORS

To the Gas Engineer vacuum and pressure are quantities to be measured with precision if full knowledge of working conditions is to be gained and utilised.

Dead-Beat Indicators are constructed and calibrated to this end—to provide Gas Engineers with instruments of precision and of guaranteed accuracy and reliability.

Dead-Beat Indicators are supplied in ranges to meet customers' requirements within limits 0-1″ w.g. and 0-400 lbs., and any combinations of vacuum and pressure, e.g., ·5″-0-·5″, 10″-0-10″.

THE SOCIETY OF BRITISH GAS INDUSTRIES · 1905 · THE

Alexander Wright & Co. Ltd.
WESTMINSTER · S · W · 1

Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists, see later pages)

The new Account opened quietly last week and prices moved within narrow limits. A late rally, however, set in on Thursday which was maintained up to the close, and, though no marked increase in the volume of business ensued, it was apparent that buyers were once more beginning to outnumber sellers. The gilt-edged market after a weak opening showed signs of recovery towards the close, and prices finished with little change over a week ago. A feature was the stimulus given to the Home Rail Market on the publication of interim statements by the Southern and London and North Eastern Railways. The industrial market though quiet provided some good points, notably among shipping and iron and steel shares.

The Gas Market proved no exception to the general rule. The number of recorded transactions was comparatively small, and with few exceptions prices closed unchanged. Apart from *ex* div. reductions, the only alteration in the Official List was a drop of 2 points in Imperial Continental to 148½, while in the Supplementary List the nominal quotation of Eastbourne "B" fell 2½ to 132½ on a narrowing of margins.

The interim dividend season is now at hand and among the latest announcements are the following: Bath 2½%, Bristol 2½%, Cardiff 3%, Commercial 2½%, Croydon maximum dividend stock 2½%, Sliding-scale stock 3½%, Gas Light and Coke £2 16s.%; Newport (Mon.) 2½%, South Metropolitan 2½%, Tottenham 3⅜%, Wandsworth 3½%, all of which are at the same rates as a year ago.

Current Sales of Gas Products

The London Market for Tar Products.

LONDON, *July* 26.

To-day's prices of tar products in the London market are as follows:

Pitch, 38s. per ton, f.o.b.
Creosote, 6d. to 6¼d.
Refined tar, 3¾d.
Pure toluole, 2s. 6d.; pure benzole, 1s. 9d.; 95/160 solvent naphtha, about 1s. 8d., and 90/160 pyridine, about 8s.; all per gallon naked at makers' works.

Tar Products in the Provinces.

July 26.

The average prices of gas-works products during the week were: Gas-works tar, 23s. 6d. to 28s. 6d. Pitch—East Coast, 36s. to 37s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 36s. to 37s. 6d.* Toluole, naked, North, 2s. to 2s. 1d. Coal tar, crude naphtha, in bulk, North, 8½d. to 9d. Solvent naphtha, naked, North, 1s. 6½d. to 1s. 6¾d. Heavy naphtha, North, 1s. 5d. to 1s. 5½d. Creosote, *ex* works, in bulk, North, liquid and salty, 5d. to 5¼d.; low gravity, 4⅝d. to 4¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 4s. 1½d. to 4s. 3d. Naphthalene, £18 to £20. Salts, 90s. to 95s., bags included. Anthracene "A" quality, 4¼d. to 4½d. per minimum 40% purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *July* 24.

There is little or no change in market conditions, although local business has been restricted during the week owing to the Glasgow Fair Holidays.

Crude gas-works tar.—The actual value is 37s. to 38s. per ton *ex* works in bulk.

Pitch remains dull with makers' prices unchanged at about 30s. to 32s. 6d. per ton f.o.b. Glasgow for export, and 30s. per ton *ex* works in bulk for home trade.

Refined tar is quite active and quotations are being held at 3d. to 3¼d. per gallon free on rails for export, and 3¼d. to 3⅜d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—Fair quantities are changing hands at the following prices: Specification oil, 5½d. to 5⅝d. per gallon; low gravity, 6d. to 6¼d. per gallon; neutral oil, 5¼d. to 5½d. per gallon; all *ex* works in bulk.

Cresylic acid.—While little or no new business is being arranged, makers are so well sold that prices are well held as follows: Pale, 97/99%, 4s. 5d. to 4s. 7d. per gallon; dark, 97/99%, 4s. 2d. to 4s. 4d. per gallon; and pale, 99/100%, 4s. 10d. to 5s. 1d. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—Available supplies command 6d. to 6¼d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—Production is well looked after at 1s. 4½d. to 1s. 5¼d. per gallon for 90/160 grade, and 11d. to 1s. per gallon for 90/190 heavy naphtha.

Motor benzole continues to be valued at round 1s. 4¼d. to 1s. 5d. per gallon.

Pyridine.—Prices are nominal at 7s. to 8s. per gallon for 90/160 grade, and 8s. to 9s. per gallon for 90/140 grade.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	10	to	0	10½	per gallon at works
Motor "	1	3¼	"	1	4	" " "
90% "	1	4½	"	1	5	" " "
Pure "	1	8½	"	1	9	" " "

Contracts Advertised To-Day

Cast Iron Pipes and Specials.

Clacton Gas and Water Department. [p. 250.]

Coal.

Wallasey Gas Department. [p. 250.]

Coal Store.

Lakes Urban District Council. [p. 250.]

Coke Cutting, Grading, and Handling Plant.

Municipal Gas-Works, Budapest. [p. 250.]

Coke Quenching Plant, &c.

Municipal Gas-Works, Budapest. [p. 250.]

Horizontal Carbonizing Plant.

Lakes Urban District Council. [p. 250.]

Purchase, Dismantling, and Removal of Iron and Steel Work.

Southport Gas Department. [p. 250.]

Retort House.

Lakes Urban District Council. [p. 250.]

Metropolitan and Suburban Companies' Dividends

Commercial.

The Directors of the Commercial Gas Company have declared an interim dividend of 2½% (less income-tax) on the ordinary stock of the Company for the half-year to June 30, 1937, payable Aug. 16. The dividend is at the same rate as that paid for the corresponding half-year of 1936.

Croydon.

At a meeting of the Directors of the Croydon Gas Company on July 23 it was decided that the following dividends be paid in respect of the half-year ended June 30, 1937: Preference stock, 4% per annum; maximum dividend stock, 5% per annum; and sliding scale stock, 7% per annum.

Gas Light and Coke.

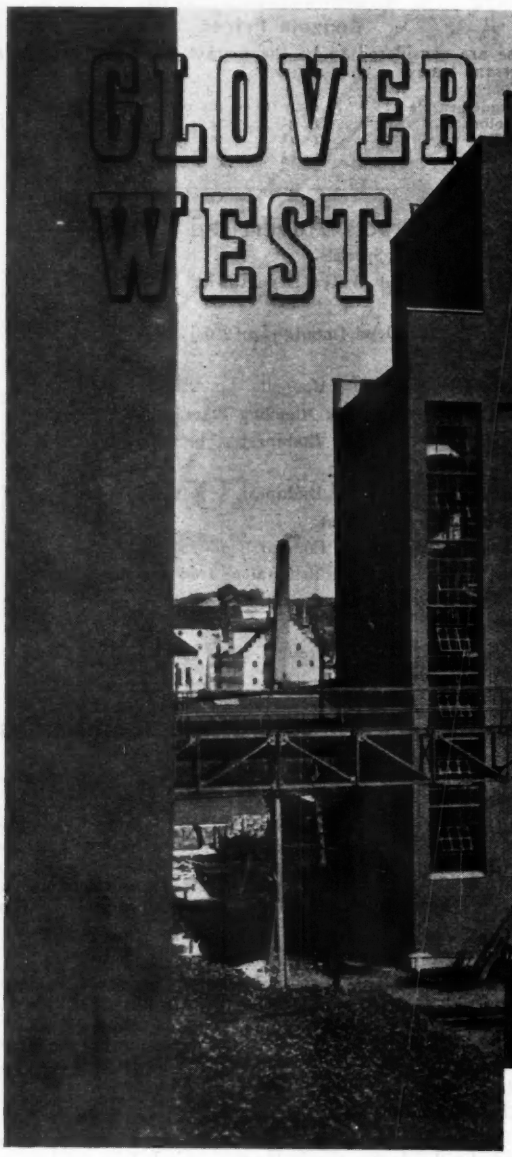
The Directors of the Gas Light and Coke Company have declared dividends for the half-year ended June 30 last as follows: On the 4% consolidated preference stock at the rate of £4% per annum; on the 3¾% redeemable preference stock, 1970, at the rate of £3 15s.% per annum; on the 3½% maximum stock at the rate of £3 10s.% per annum; and on the ordinary stock at the rate of £5 12s.% per annum.

Tottenham.

In respect of the half-year ended June 30, 1937, dividends have been declared by the Directors of the Tottenham and District Gas Company at the following rates (all less income-tax): 5% preference stock, 5% per annum; 5½% preference stock, 5½% per annum; 6% redeemable preference stock, 6% per annum; and ordinary stock, 6¾% per annum. These dividends are payable on Aug. 11.

Wandsworth.

Dividends in respect of the half-year to June 30, 1937, have been declared by the Wandsworth and District Gas Company as follows: On the 4% preference stock, 4% per annum; on the 5% preference stock, 5% per annum; and on the consolidated stock, 7% per annum.



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STOCK AND SHARE LIST

Official Quotations on the London Stock Exchange

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 23.	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,767,439	Stk.	Mar. 15	8	8	Alliance & Dublin Ord. ...	170—175	...	171
374,000	,,	June 21	4	4	Do. 4 p.c. Deb. ...	95—100	...	...
558,890	,,	Feb. 15	7	7	Barnet Ord. 7 p.c.	160—165	...	...
300,000	1	Apl. 5	1/4⅛	1/9⅛	Bombay, Ltd.	25/6—27/6	...	...
179,915	Stk.	Mar. 1	9½	9½	Bournemouth sliding scale ...	195—205	...	...
590,407	,,	,,	7	7	Do. 7 p.c. max. ...	161—166	...	...
493,960	,,	,,	6	6	Do. 6 p.c. Pref. ...	133—138	...	133½—135
50,000	,,	June 21	3	3	Do. 3 p.c. Deb. ...	79—84	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...	102
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	116—121	...	...
357,900	,,	Feb. 15	7½	7½	Brighton, &c., 6 p.c. Con. ...	155—160	...	157
649,955	,,	,,	6¾	6¾	Do. 5 p.c. Con. ...	138—143	...	140—141
205,500	,,	,,	6	6	Do. 6 p.c. 'B' Pref.	130—135	...	...
855,000	,,	Mar. 1	7	8	British Ord.	148—153	...	...
100,000	,,	June 21	7	7	Do. 7 p.c. Pref.	140—145	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	108—113	...	...
120,000	,,	June	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...	...
450,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1⅛—2⅛	...	...
100,000	10	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1⅛—3⅛	...	...
150,000	Stk.	June 21	4½	4½	Do. 4½ p.c. Deb. ...	79—84	...	...
626,860	,,	July 19	6	6	Cardiff Con. Ord.	125—130*	—2	...
237,860	,,	June 7	5	5	Do. 5 p.c. Red. Deb.	107—112	...	...
98,936	1	Apl. 5	2/-	2/-	Colombo Ord.	1⅛—1¼	...	...
24,510	1	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref. ...	23/—25/-	...	...
739,453	1	Mar. 15	-/11/48	-/11/48	Colonial Gas Assn. Ltd. Ord.	18/—20/-	...	...
296,144	1	,,	1/3/30	1/3/30	Do. 8 p.c. Pref.	22/—24/-	...	...
1,775,005	Stk.	Feb. 1	5	5	Commercial Ord.	88—93	...	92—92½
620,000	,,	June 7	3	3	Do. 3 p.c. Deb. ...	74—79	...	76
286,344	,,	Feb. 15	5	5	Do. 5 p.c. Deb. ...	115—120	...	...
807,560	,,	Feb. 15	7	7	Croydon sliding scale ...	143—148	...	...
644,590	,,	,,	5	5	Do. max. div.	109—114	...	...
620,385	,,	June 21	5	5	Do. 5 p.c. Deb.... ...	113—118	...	...
239,000	,,	Feb. 1	5	5	East Hull Ord. 5 p.c.... ...	100—105	...	...
185,355	,,	Feb. 15	6	6	East Surrey Ord. 5 p.c. ...	122—127	...	...
176,211	,,	June 7	5	5	Do. 5 p.c. Deb. ...	113—118	...	...
250,000	1	July 5	4	7	Gas Consolidation Ord. ...	20/—22/-	...	21/3—21/4½
250,000	1	May 24	4	4	Do. 4 p.c. Red Cum. Pref.	19/—21/-	...	...
19,255,284	Stk.	Feb. 1	5½	5½	Gas Light & Coke 4 p.c. Ord.	24/9—25/9a	...	24/10¾—25/4½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	82—85	...	84—85
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	100—103	...	101—102⅝
2,993,000	,,	July 5	...	3½	Do 3½ p.c. Red. Pref.	100—103	...	101⅞—102⅝
8,602,497	,,	May 24	3	3	Do. 3 p.c. Con. Deb. ...	80—83	...	80—81
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	110—113	...	113
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb....	109—112	...	112
700,000	,,	Mar. 1	25/5⅝	3½	Do. 3½ p.c. Red. Deb....	96—101	...	...
270,466	,,	Feb. 15	6	6	Harrogate New Cons. ...	122—127	...	...
213,200	,,	Feb. 15	6	6	Hornsey Con. 3½ p.c. ...	120—125	...	...
5,600,000	,,	May 24	8	12	Imperial Continental Cap. ...	146—151	—2	147—151¾
223,130	,,	July 19	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94*	—1	...
285,242	,,	Mar. 1	8½	8½	Lea Bridge 5 p.c. Ord. ...	160—165	...	...
75,000	,,	May 24	†10	†10	Malta & Mediterranean ...	150—160	...	...
392,000	—	Apl. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	98—103	...	...
231,978	Stk.	Feb. 15	5	5	M.S. Utility 'C' Cons. ...	102—107	...	...
968,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...	...
360,075	,,	June 21	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
148,955	,,	,,	5		Do. 5 p.c. Deb. ...	115—120	...	...
125,000	—	July 1	3½	3½	Do. 3½ p.c. Rd.Rg.Bds.	96—99	...	...
675,000	Stk.	May 3	†6	†9	Montevideo, Ltd.	87—92	...	90—91
250,000	,,	Feb. 15	7½	7½	North Middlesex 6 p.c. Con.	160—170	...	...
396,160	,,	Feb. 1	5	5	Northampton 5 p.c. max. ...	112—117	...	...
300,000	,,	Apl. 19	†9	†7	Oriental, Ltd....	162—167	...	...
468,537	,,	June 7	8	8	Plymouth & Stonehouse 5 p.c.	160—170	...	168
621,667	,,	Feb. 15	8½	8½	Portsmouth & Gosport Cons.	167—172	...	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	105—110	...	...
73,350	,,	,,	...	5	Do. 5 p.c. Pref. ...	112—117	...	114
441,275	1	May 3	1/-	1/1⅛	Severn Val. Gas Cor. Ld. Ord.	21/—23/-	...	22/3
460,810	1	Mar. 15	-/10⅛	-/10⅛	,, ,, 4½ p.c. Cum. Pref.	20/—22/-	...	20/9
133,201	Stk.	Feb. 15	5	8⅛	Shrewsbury 5 p.c. Ord. ...	140—145	...	...
1,371,752	1	May 3	1/2⅜	1/2⅜	South East'n Gas. Cn.Ld. Ord.	24-/—26/-	...	24/9—25/0⅜
871,636	1	Mar. 1	-/10⅛	-/10⅛	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...	20/6—21/-
498,818	1	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/6—20/6	...	19/6—19/7½
450,000	Stk.	Feb. 15	4	4	Do. 4 p.c. Deb.	100—102	...	...
150,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	99—101	...	...
6,709,895	,,	Feb. 1	5	6	South Met. Ord.	107—110	...	108—109½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf. ...	132—137	...	...
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf. ...	98—101	...	100
1,895,445	,,	June 21	3	3	Do. 3 p.c. Deb. ...	75—80	...	76½—77¾
1,000,000	,,	July 5	5	5	Do. 5 p.c. Red. Deb....	106—111	...	...
1,543,795	,,	Feb. 1	6	6	South Suburban Ord. 5 p.c....	122—127	...	...
512,825	,,	,,	5	5	Do. 5 p.c. Pref....	112—117	...	...
500,000	,,	,,	4	4	Do. 4 p.c. Pref....	95—100	...	...
888,587	,,	June 7	5	5	Do. 5 p.c. Deb....	115—120	...	118—119½
250,000	,,	,,	4	4	Do. 4 p.c. Deb....	97—102	...	98½
200,000	,,	...	...	...	Do. 3½ p.c. Red. Deb.	95—100	...	...
427,859	1	May 3	9⅜	1/2⅜	S. Western Gas & Water Ord.	19/—21/-	...	19/-
160,523	1	Apl. 19	-/10⅜	-/10⅜	Do. 4½ p.c. Red. Cum. Pf.	20/—22/-	...	...
110,000	Stk.	June 21	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...	...
750,541	,,	Feb. 1	5	5½	Southampton Ord. 5 p.c. ...	111—116	...	115—115¾
148,836	,,	June 7	4	4	Do. 4 p.c. Deb.	97—102	...	98
350,000	,,	Feb. 15	5½	5½	Swansea 5½ p.c. Red. Pref. ...	110—115	...	...
94,000	,,	June 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
1,076,490	,,	Feb. 15	6⅝	6⅝	Tottenham and District Ord.	137—142	...	...
409,835	,,	,,	5⅝	5⅝	Do. 5½ p.c. Pref....	123—128	...	...
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
371,850	,,	June 7	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
750,000	1	Apl. 5	4	6	U. Kingdom Gas Cor. Ord.	20'6—22,6	...	20/9
936,338	1	May 3	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	20/—22/-	...	20/—21/3
740,933	1	June 7	4½	4½	Do. 4½ p.c.2nd Non-Cum.Pf	17/—19/-	...	17/9—18/3
700,000	Stk.	Mar. 15	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...	97¾
373,939	,,	Feb. 15	7	7	Uxbridge, &c., 5 p.c. ...	150—155	...	...
133,010	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
1,371,138	,,	Feb. 1	7	7	Wandsworth Consolidated ...	143—148	...	...
1,620,615	,,	,,	5	5	Do. 5 p.c. Pref. ...	118—123	...	...
500,000	,,	,,	33/4	4	Do. 4 p.c. Pref. ...	97—100	...	...
1,343,964	,,	June 7	5	5	Do. 5 p.c. Deb. ...	115—120	...	117½—119½
383,745	,,	,,	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
558,342	,,	Feb. 1	7	7	Watford and St. Albans Ord.	142—147	...	...
200,000	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
200,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	123—128	...	...
200,000	,,	June 7	4	4	Do. 4 p.c. Red. Deb.	97—102	...	...
100,000	,,	,,	3½	3½	Do. 3½ p.c. Red.Deb.	95—100	...	...

a.—The quotation is per £1 of Stock. * Ex div. † Paid free of income-tax. ‡ For year. § Actual.

Stock and Share List continued overleaf.

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Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. July 23.	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	July 19	6	5	Bath Cons.	119—121*	−2	...
1,667,250	,,	July 19	5	5	Bristol, 5 p.c. max.	114—116*	−1½	...
120,420	,,	June 7	4	4	Do. 1st 4 p.c. Deb. ...	100½—102½	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100½—102½	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	120—123	...	...
274,000	,,	July 19	5	5	Newport (Mon.) 5 p.c.max. ...	101—106*	−2	...
13,200	12	Mar. 15	7	8	Pontyp'l Gas & W. 10 p.c. 'A'	13½—14½	...	...
13,600	10	,,	5	6	Do. 7 p.c. 'B'	12—12½	...	...
40,000	10	,,	5	6	Do. 7 p.c. 'C'	12—12½	...	...
140,778	Stk.	Feb. 1	5	5	Weston-super-Mare Cons. ...	112—113	...	...
64,338	,,	June 21	4	4	Do. 4 p.c. Deb.	96—98	...	...
33,340	,,	,,	7⅛	7⅛	Do. 7⅛ p.c. Deb.	157—160	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Feb. 1	5	6½	Chester 5 p.c. Ord.	106—111	...	...
92,500	,,	June 21	4	4	Do. 4 p.c. Pref.	97—101	...	...
36,430	,,	,,	3	3½	Do. 3½ p.c. Deb.... ...	89—92	−1	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	98—102	...	...
2,167,410	,,	Feb. 15	6	6	Liverpool 5 p.c. Ord. ...	126—128	...	...
245,500	,,	June 21	5	5	Do. 5 p.c. Red. Pref. ...	99—104	...	...
306,083	,,	July 1	4	4	Do. 4 p.c. Deb. ...	102—104	...	...
106,280	,,	Feb. 1	10	10	Preston 'A' 10 p.c.	210—220	...	...
188,219	,,	,,	7	7	Do. 'B' 7 p.c.	150—160	...	...
NEWCASTLE EXCHANGE.								
122,577	Stk.	Feb. 1	8	8	Blyth 5 p.c. Ord.	166—168	...	...
732,000	,,	Feb. 15	5	5	Hartlepool G. & W. Cn. & New	124—126	...	...
2,061,315	,,	Feb. 1	5	5⅝	Newcastle & Gateshead Con.	25/3—25/9*a*	...	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	100—101	...	...
776,706	,,	June 21	3½	3½	Do. 3½ p.c. Deb. ...	91—92	...	...
277,285	,	Nov. 2	5	5	Do. 5 p.c. Deb. '43...	108—109	...	...
332,351	,	Feb. 1	6	6	Sunderland 6 p.c. max. ...	139—141	...	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Mar. 1	7	9	Derby Con.	155—165	...	...
55,000	,,	June 7	4	4	Do. 4 p.c. Deb.	100—105	...	...
84,750	,,	Feb. 17	5	12	Long Eaton 'A' Ord. ...	...	...	...
50,000	,,	,,	4	10	Do. 'B' Ord. ...	...	...	...
20,000	10	June 21	5	5	Do. 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...	...
SHEFFIELD EXCHANGE.								
10,000	Stk.	Feb. 15	10	10	Great Grimsby 'A' Ord. ...	210—220	...	...
6,500	,,	,,	10	10	Do. 'B' Ord. ...	210—220	...	...
79,000	,,	,,	10	10	Do. 'C' Ord. ...	205—210	...	...
1,806,339	,,	Feb. 15	6	6½	Sheffield Cons.	144—146	...	...
95,000	,,	July 5	4	4	Do. 4 p.c. Deb.	100—103	...	...

Supplementary List of Stocks and Shares not Officially Quoted

202,152	Stk.	Mar. 15	25/-*b*	25/-*b*	Ascot Ord.	102—107	...	...
128,182	,,	July 5	5	5	Do. 5 p.c. Pref.	108—113	...	...
474,410	1	May 24	5	5	Assd. Gas and Water Ord. ...	19/6—21/6	...	...
500,000	1	,,	4½	4½	Do. 4½ p.c. Cum. Pref. ...	19/6—21/6	...	20/6—21/3
500,000	Stk.	Mar. 15	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	97½
31,035	1	...	...	...	Associated Utilities 4 p.c. Pref.	17/—19/-	...	...
100,000	Stk.	...	...	...	Do. 3½ p.c. Red. Deb.	95—100	...	...
17,000	,,	Feb. 15	8	8	Bognor Orig. Ord. 'A' ...	160—170	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	160—170	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	141—146	...	...
37,440	,,	Feb. 1	10	10	Cam. Univ. & Town 10 p.c.max.	195—205	...	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	137—142	...	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	98—103	...	...
65,000	,,	Mar. 1	7⅛	8½	Eastbourne 'A' 5 p.c. ...	160—165	...	161½—163½
198,000	,,	,,	6	7	Do. 'B' 3½ p.c.	130—135	−2½	131½—133
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
130,000	,,	June 21	5	5	Do. 5 p.c. Deb.	115—120	...	...
24,000	30	Feb. 1	8½	8½	Great Yarmouth 8½ p.c. max.	45—50	...	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.	40—45	...	...
51,160	Stk.	June 7	5⅛	5⅛	Do. 5⅛ p.c. Deb.	120—125	...	...
152,600	,,	Feb. 15	8	9	Guildford Cons.	172—177	...	...
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	112—117	...	...
68,250	,,	June 7	5	5	Do. 5 p.c. Deb.	113—118	...	...
156,600	,,	Feb. 15	7½	7½	Hampton Court Cons. ...	160—165	...	160—161
73,620	,,	Mar. 15	8½	8½	Luton Cons. 'A'	166—171	...	...
107,960	10	Mar. 15	4	5⅛	Mid Kent Ord.	9—10	...	...
230,940	Stk.	Feb. 15	10	10	Oxford & District Ord. ...	207—212	...	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	112—117	...	...
126,193	,,	May 3	7⅛	7⅛	Peterborough Ord.	159—169	...	...
64,990	,,	Mar. 15	6½	7⅛	Redditch Ord.	127—137	...	...
166,850	,,	Feb. 15	8	8	Romford Ord.	157—167	...	...
60,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100	...	...
44,000	,,	Mar. 15	5	5	Do. 5 p.c. Deb.	115—120	...	...
25,570	,,	Feb. 15	5½	5½	Rugby 5½ p.c. Pref.	125—130	...	...
25,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	106—111	...	...
42,750	,,	June 7	5½	5½	Do. 5½ p.c. Deb.	122—127	...	...
10,950	,,	Mar. 1	8	8	Ryde Ord.	160—165	...	...
136,191	,,	Feb. 15	5	7	Scarborough Ord.	123—133	...	...
27,825	,,	Feb. 1	8	8	Shanklin & Ventnor Cons. ...	158—168	...	...
270,086	,,	Mar. 15	7	7	Slough Ord.	137—142	...	...
21,000	,,	June 21	5	5	Do. 5 p.c. Deb.... ...	112—117	...	...
28,872	1	May 24	5⅛	5⅛	S. Midland Gas Cpn. Ltd. Ord.	19/—21/-	...	...
28,866	1	Mar. 15	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...	...
137,730	Stk.	Feb. 15	7	7	Southgate & Dist. 7 p.c. max.	140—145	...	...
62,500	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
117,228	,,	Feb. 15	6	5	Swindon Cons.	108—113	...	...
60,425	,,	June 7	5	5	Do. 5 p.c. Deb.	110—115	...	...
64,380	,,	June 7	5	5	Torquay and Paignton 5 p.c. Pf	110—115	...	...
130,000	,,	Feb. 15	5	8	Wakefield Ord.	126—131	...	...
81,650	,,	,,	5	5	Do. 5 p.c. max.	103—108	...	...
82,000	,,	Feb. 1	6	6	Weymouth Ord.	103—108	...	...
98,384	,,	Feb. 1	6	6	Wolverhampton 6 p.c. Pref....	125—130	...	...
160,000	,,	June 21	5⅛	5⅛	Do. 5⅛ p.c. Rd. Db	108—113	...	...
370,000	,,	Feb. 15	4⅝	6	York Cons.	105—110	...	...
90,000	,,	June 21	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...	...
133,640	,,	July 19	6½	6½	Yorktown (Cam.) 5 p.c Cons.	128—133*	−2	...
120,000	,,	,,	5	5	Do. 5 p.c. Pref.	108—113*	−2	...
35,000	,,	June 7	5⅛	5⅛	Do. 5⅛ p.c. Deb.	123—128	...	...

a The quotation is per £1 of Stock. *b* Actual for Quarter. * Ex div.

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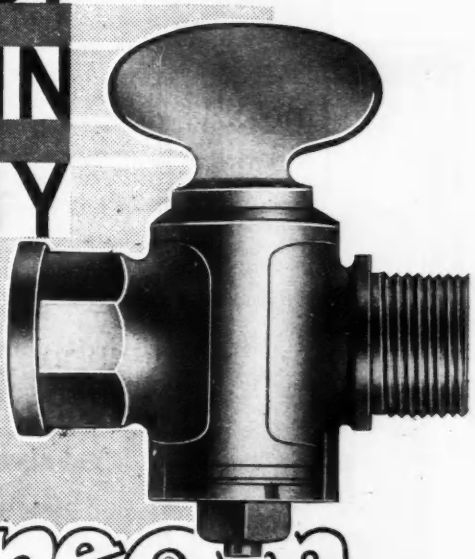

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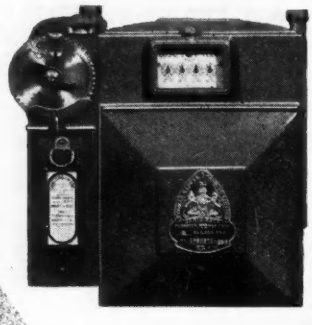

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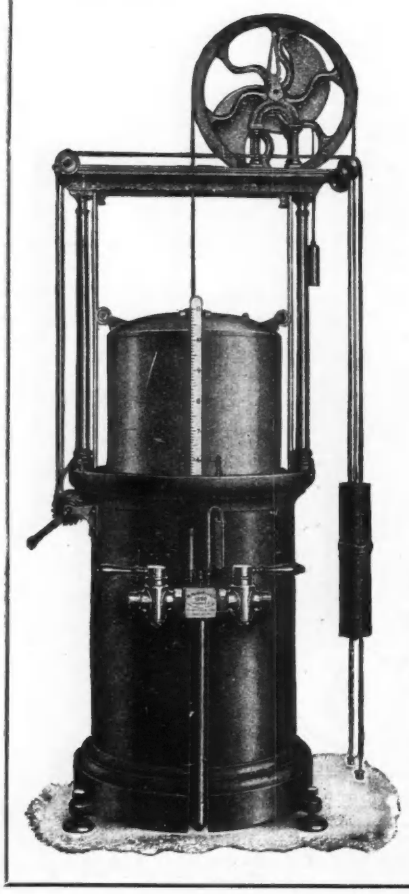

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